Guide to Microsoft System Center Management Pack for Microsoft Azure SQL Database

Microsoft Corporation
Published: April 2018

The Operations Manager team encourages you to provide any feedback on the management pack by sending them to sqlmpsfeedback@microsoft.com.

Copyright

Contents

Guide to Microsoft System Center Management Pack for Microsoft Azure SQL Database

Document Version

This guide is based on version 7.0.4.0 of the management pack.

Changes History

Release date	Changes
April 2018 (version 7.0.4.0 RTM)	• Fixed issue: The management pack may stop working due to a conflict of the Azure REST API libraries with the ones coming from the Microsoft Azure Management Pack • Provided a few minor UI improvements to the Add Monitoring Wizard
May 2017 (version 6.7.28.0 RTM)	• Due to performance problems, several monitors and performance rules were enabled for getting information via T-SQL queries only (the affected metrics are as follows: Failed Connections, Blocked Connections, Successful Connections, Deadlocks Count) • Fixed Azure SQL DB: DB Transactions Locks Count rule and Transaction Locks Count monitor • Fixed Microsoft Azure SQL Database Event Log Collection Target Management Service Discovery • Fixed Server Exclude list filter: servername could not contain whitespaces • Fixed the display strings, implemented appropriate Azure Portal naming style
March 2017 (version 6.7.25.0 CTP2)	• Implemented performance improvements • Improved error handling in Add Monitoring Wizard • Fixed issue: "Collect Elastic Database Pool Number of Databases" rule does not collect performance data if REST monitoring is used • Fixed issue: "Operations Manager Expression Filter Module" error messages appear in the Operations Manager event log
December 2016 (version 6.7.11.0)	• Azure Resource Manager is now supported: the previous versions of the Management Pack used T-SQL queries to SQL Server system views to get information on the health and performance of the databases; now, the Management Pack can also get this information from Azure REST API (this is a preferred option) • Multiple subscriptions and multiple servers are now supported • Added support for Azure AD authentication • Added regular expression filtering capability for Azure SQL Database instances and Elastic Pools

Release date	Changes
	• Improved monitoring efficiency: monitoring target is now defined by monitoring pool; WatcherNode class is considered to be deprecated • Improved SCOM Add Monitoring Wizard to reflect the new features of the Management Pack • Added health monitoring for Database Geo-Replication • Added health monitoring for Elastic Pools • Added monitoring for “Average DTU utilization percentage” metric • Fixed issue: some rules work only if more than 1% of Microsoft Azure SQL Database space is used • Introduced performance improvements to the Management Pack • Optimized performance rules notation: all Object Names are standardized; Instance Names are not used anymore • Updated the guide to reflect all the changes • Updated the visualization library
June 2016 (version 1.6.1.0)	• Added Dashboards • Added a number of new monitors and rules, including the following: ▪ CPU Usage (%) ▪ Workers Usage (%) ▪ Log write (%) ▪ Data I/O (%) ▪ Sessions (%) ▪ Count Failed Connection ▪ Count Successful Connection ▪ Count Connection Blocked by Firewall ▪ Count of Deadlock ▪ Count Throttling long transaction ▪ Count Connection Failed ▪ XTP Storage (In-memory OLTP Storage, %) • Deprecated Collect Microsoft Azure SQL Database Internal/External Network Egress/Ingress performance rules • Deprecated SQL Azure Federation and Federation member workflows • Implemented rebranding: the management pack and some workflow names have been changed
May 2013	The original release of this management pack

Introduction to the Management Pack Guide

Microsoft Azure SQL Database Management Pack provides both proactive and reactive monitoring of Microsoft Azure SQL Database.

The monitoring provided by this management pack includes availability, performance data collection and default thresholds. You can integrate the monitoring of Microsoft Azure SQL Database components into your hybrid cloud service monitoring scenarios.

In addition to health monitoring capabilities, this management pack includes extensive knowledge and views that enable near real-time diagnosis and resolution of the detected issues.

Note: This management pack is not part of System Center management pack for Microsoft Azure.

Supported Configurations

Microsoft Azure SQL Database Management Pack is designed for the System Center Operations Manager 2012. Any versions prior to Operations Manager 2012 are not supported.

This management pack has been tested on Windows Server 2012 R2. Other versions of Windows operating system have not been tested.

The current version of the management pack supports upgrade from 1.6.x versions of the management pack. At that, the existing Run As configuration remains in operation.

Note: installation of .NET Framework 4.6.1 (at least) is required.

Important!

This Management Pack is verified to handle monitoring of 2000 databases in a single management group.

Get Started

Microsoft Azure SQL Database Management Pack can monitor Microsoft Azure SQL Database, which appears to be a Microsoft's cloud-based database offering. Use the Authoring pane of the Operations Console to enable discovery of Microsoft Azure SQL Database servers and databases hosted on those servers. For more information about enabling object discovery, see Microsoft Azure SQL Database Add Monitoring Wizard section below.

Files in this Management Pack

The following table describes the files included in this management pack.

File	Display name	Description
Microsoft.SqlServer.Azure.mpb	Microsoft Azure SQL Database Monitoring	Contains definitions for object types and groups that are specific to Microsoft Azure SQL Database. It contains a template, which can be used to generate a management pack for discovering a Microsoft Azure SQL Database server. It contains the discovery logic to detect databases hosted by the discovered servers. Provides all server and database monitoring for Microsoft Azure SQL Database.
Microsoft.SqlServer.Azure.Presentation.mp	Microsoft Azure SQL Database Monitoring Presentation	Microsoft Azure SQL Database Presentation management pack. This management pack adds Microsoft Azure SQL Database Dashboard.
Microsoft.SqlServer.UserMonitoring.mpb	Microsoft Azure SQL Database User Monitoring	Provides User Monitoring for Microsoft Azure SQL Database
Microsoft.SQLServer.Generic.Dashboards.mp	Microsoft SQL Server Generic Dashboards	Generic Dashboards Management Pack
Microsoft.SQLServer.Generic.Presentation.mp	Microsoft SQL Server Generic Presentation	Generic Presentation management pack.

Import the Management Pack

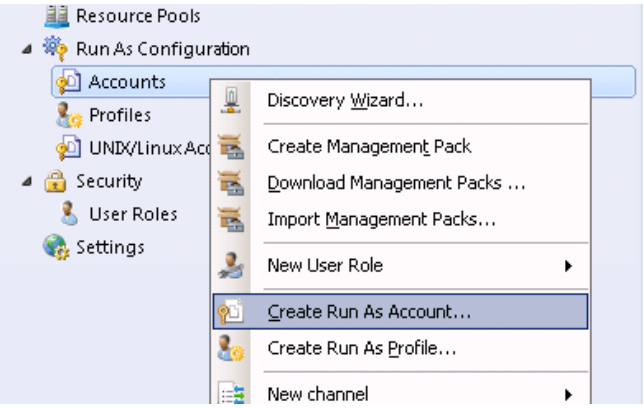
For more information about importing a management pack, see How to Import an Operations Manager Management Pack article.

Import **Microsoft.SqlServer.Azure.mpb** using the **Administration** pane in the Operations Console. After running the installer, the management pack is typically located on the system drive in **\Program Files\System Center Management Packs** folder.

Create Microsoft Azure SQL Database Run As Accounts

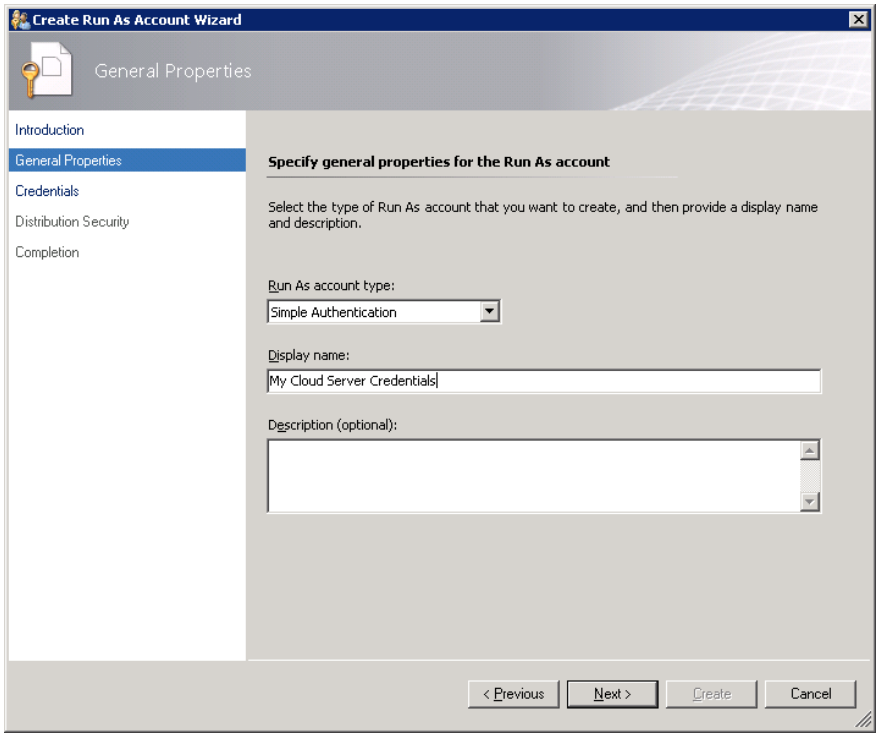
To monitor Microsoft Azure SQL Database servers, first create one or more **Simple** or **Basic** authentication Run As accounts, which contain the credentials for accessing the servers. To do this, perform the following steps:

1. In SCOM Console, navigate to **Administration** | **Run As Configuration** | **Accounts**, right-click it and select **Create Run As Account…**

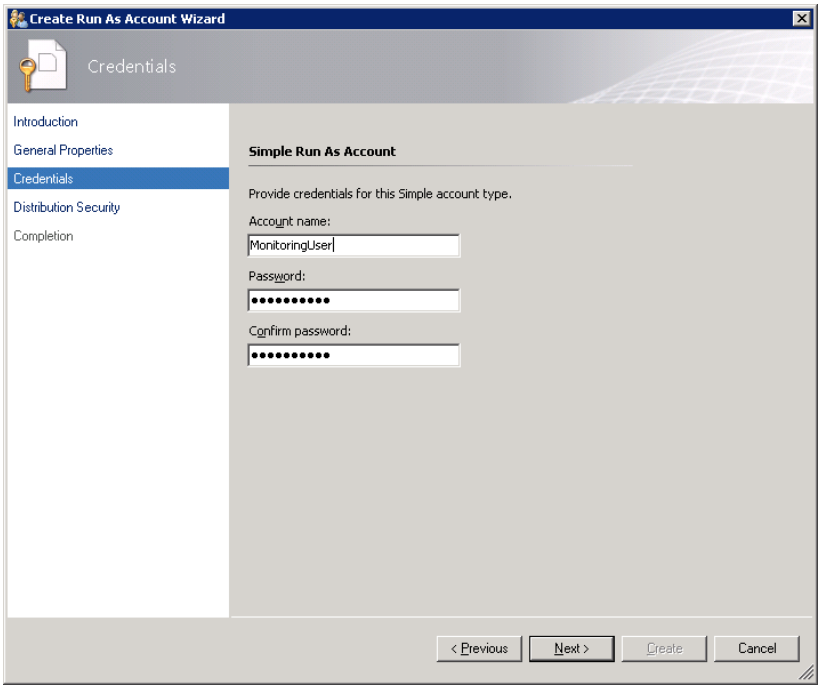


2. On the **Introduction** page, click the **Next** button.

3. On the **General Properties** page, select **Simple Authentication** in **Run As account type** combo box, populate **Display name** and click the **Next** button.



4. On the **Credentials** page, populate **Account name** and **Password** with the credentials that will be used to connect to Microsoft Azure SQL Database cloud service and click the **Next** button. For more information on this credentials, see Low-Privilege Configuration section.

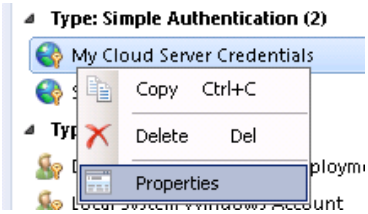


5. On the **Distribution Security** page, select **More secure** option and click the **Create** button. You can use **Less secure** option and skip steps 7 – 8 if your environment is secure enough.

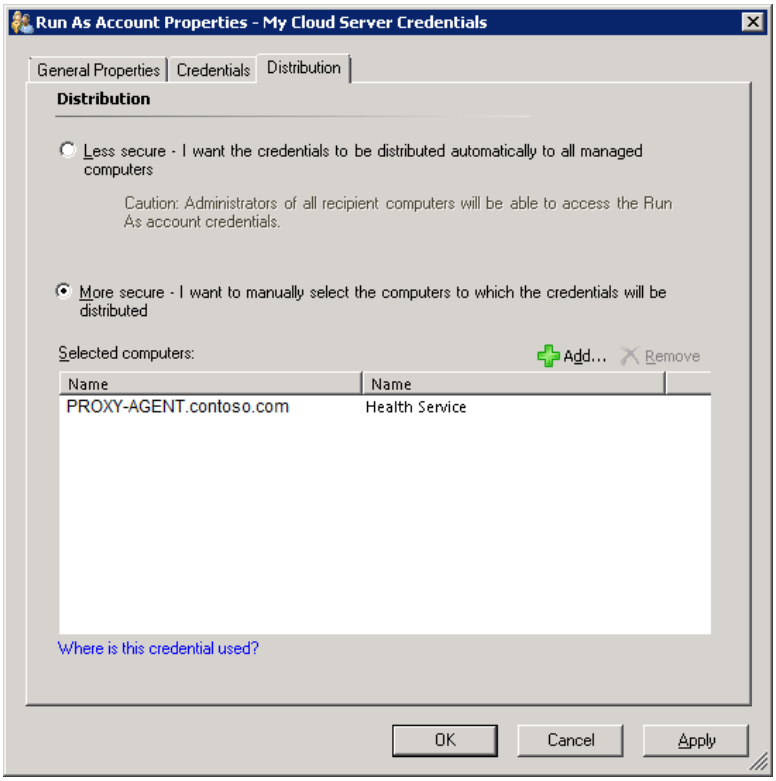
6. Click **Close** to close the window.

   If you used **Less secure** option on step 5, you can skip the next steps.

7. Right-click the newly created account and select **Properties**.



8. Navigate to **Distribution** tab and add the SCOM Agent that you wish to use as a Watcher Node to monitor Microsoft Azure SQL Database cloud service.

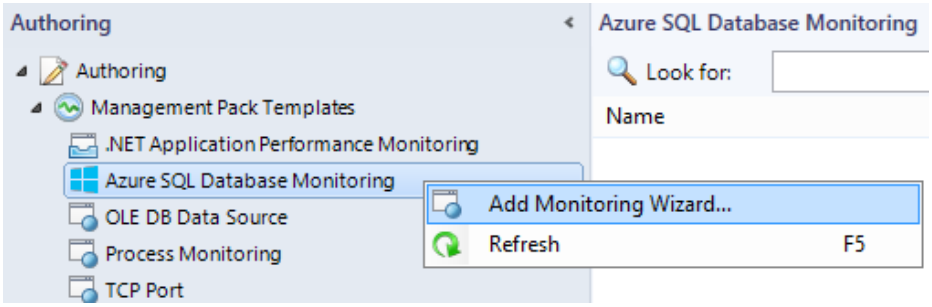


See [Managing Run As Accounts and Profiles] article for more information about Run As accounts.

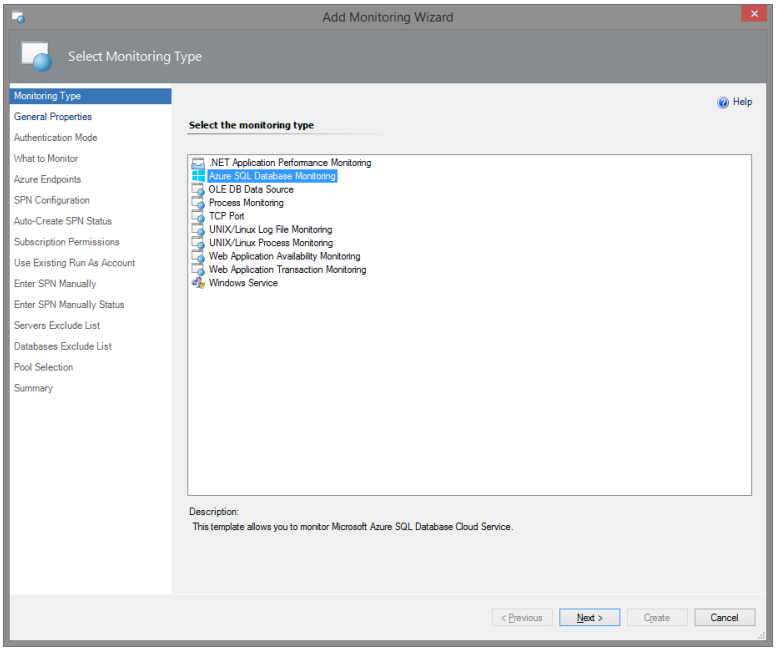
Microsoft Azure SQL Database Add Monitoring Wizard

To begin monitoring a Microsoft Azure SQL Database cloud service, perform the following steps:

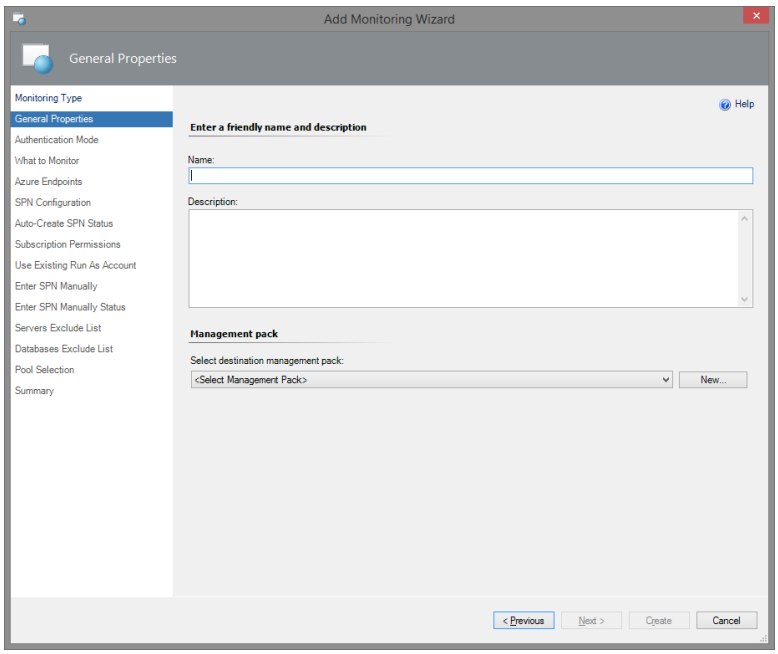
In SCOM Console, navigate to **Authoring** | **Management Pack Templates**, right-click **Microsoft Azure SQL Database Monitoring** and select **Add Monitoring Wizard…**



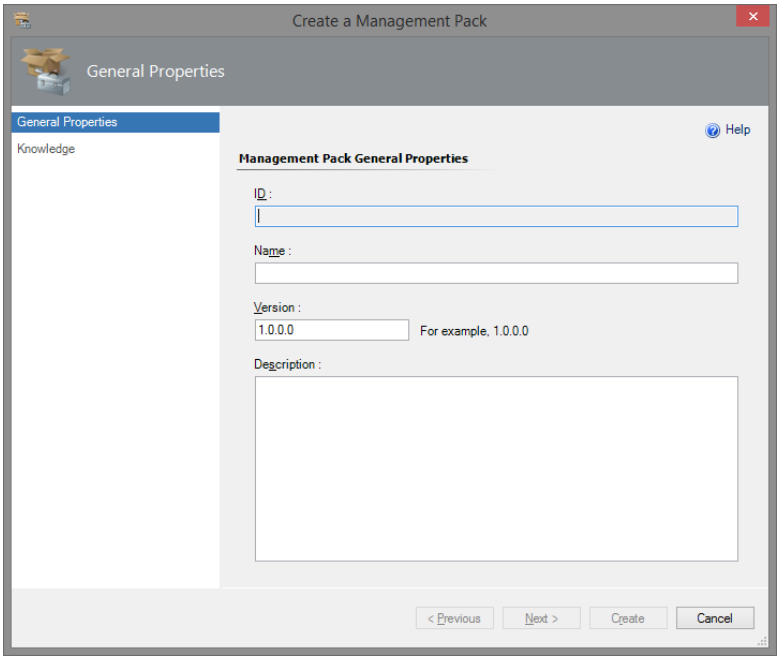
In **Monitoring Type** window, select **Azure SQL Database** Monitoring and click the **Next** button.



In **General Properties** window, you must provide your template **Name** and **Description**, as well as **Select destination management pack** where the template will be stored.

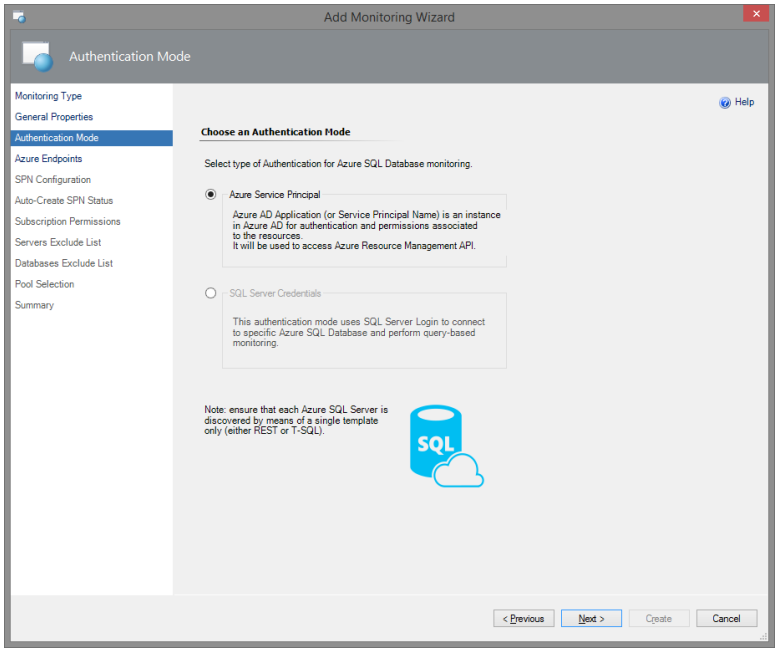


If you do not have a management pack for this purpose, you can create a new one by clicking the **New…** button.



Note: *It is recommended to use a new MP for the template.*

In the **Authentication Mode** window, select an authentication mode for the monitoring.



There are two authentication modes available: authentication by means of **Azure Service Principal** Name (SPN) and by means of **SQL Server Credentials**.

SQL Server Credentials authentication mode is meant for monitoring specific Azure SQL Database Servers. At that, Transact-SQL is used. If you choose this authentication mode and configure the permissions properly, the monitoring workflows (discoveries, rules, monitors) use T-SQL queries in datasources for their work.

Workflow datasource creates a new SQL connection for every pair of SQL Server Credentials (login/password).

SQL connections are counted for Database Transaction Units; consequently, they affect the bill (see Azure SQL Database resource limits article for more details).

While configuring the management pack template, you should manually enter SQL credentials for each Azure SQL Server and appropriate Run As account. Make sure that the provided SQL Credentials authorize the System Administrator rights.

Azure Service Principal Name authentication mode is meant for a wider range of monitoring targets. Therefore, this mode is recommended to use while working with this management pack. In this case, REST is used by default. However, Transact-SQL monitoring is also available. Make sure the corresponding box is checked while configuring your SPN monitoring.

To create Azure AD Application, Active Directory Administrator (Service Administrator or Co-Administrator) rights are needed. Non-admin users can create Azure AD Applications if the administrator grants a corresponding permission. It is necessary to have Owner (or higher) role for the target subscriptions for further assigning of the roles to the application (for the detailed information, see Use portal to create Active Directory application and service principal that can access resources article).

There is no need to configure permissions for each database in this mode. While configuring the management pack template, a new Run As account with SPN credentials is created by means of Azure REST API (see Azure REST API Reference article for more details).

Note that if you choose this authentication mode, the monitoring workflows (discoveries, rules, monitors) use Azure SQL REST API requests in the datasources for their operation. Nevertheless, T-SQL monitoring is also possible while using Azure SPN authentication mode. See the next section for more details.

T-SQL Monitoring

You can use Transact-SQL to receive additional monitoring information and neutralize Azure Subscription throttling effects. If you want to perform T-SQL monitoring while using SPN, you should create a separate user for every monitored database and give it the necessary permissions. To do so, perform the following requests on the SQL Server:

CREATE USER [ApplicationName] FROM EXTERNAL PROVIDER;

GRANT VIEW DATABASE STATE TO [ApplicationName] - at User database

exec sp_addrolemember 'dbmanager', 'ApplicationName' - at Master database

To perform these queries via SSMS, it is necessary to connect to Azure SQL server as **Active Directory Administrator**.

Upon assigning the permissions to SPN for every database, T-SQL monitoring should work properly in REST+T-SQL.

Note: There are some workflows, which work in T-SQL mode only. This is the result of the fact that Azure SQL REST API cannot get some data; particularly, it cannot read the data from “master” databases. Those workflows are as follows:

Rules:

- Azure SQL DB: DB Transactions Locks Count
- Azure SQL DB: DB Sessions Count
- Azure SQL DB: DB Sessions Average Memory Consumption (MB)
- Azure SQL DB: DB Sessions Rows Returned
- Azure SQL DB: DB Sessions Total CPU Time (ms)
- Azure SQL DB: DB Sessions Total Read/Write Operations
- Azure SQL DB: DB Sessions Total Memory Consumption (MB)
- Azure SQL DB: DB Transactions Max Log Usage (MB)
- Azure SQL DB: DB Transactions Max Running Time (minutes)

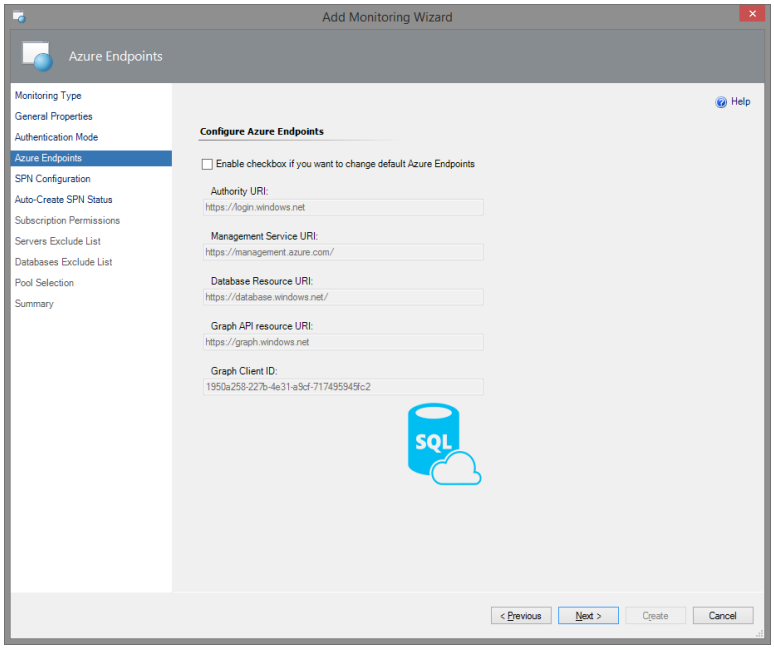
Monitors:

- Transaction Locks Count
- Sessions Count
- Sessions Average Memory
- Sessions Rows Returned
- Sessions Total CPU Time
- Sessions Total I/O
- Sessions Total Memory
- Transaction Log Space Used
- Transaction Execution Time

Note: For proper monitoring of georeplicas by means of T-SQL, please ensure that you have SQL Administrator rights on each server of the replicas.

Azure SPN Authentication Mode

If you select **Azure Service Principal** authentication mode, **Azure Endpoints** configuration window will be displayed after clicking the **Next** button.

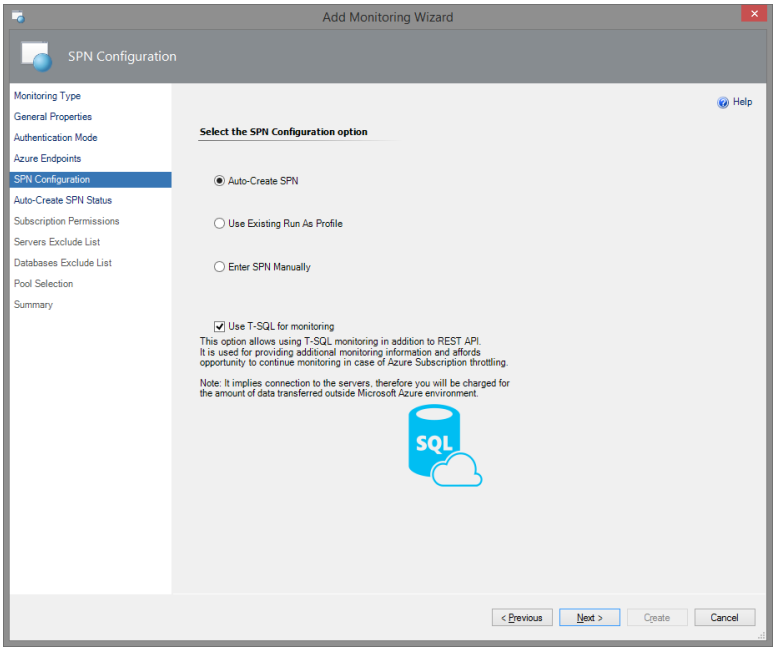


If you need to change the default Azure Endpoints, check the corresponding box. At that, the values in the fields will become editable.
The endpoints used for creating Azure Service Principal are as follows:

- Authority URI: https://login.windows.net
- Management Service URI: https://management.azure.com/
- Database Resource URI: https://database.windows.net/
- Graph API Resource URI: https://graph.windows.net

Note: The https://management.azure.com/ endpoint is also used for **Azure SQL REST API**. In this case, Firewall port 443 should be used. Nevertheless, according to Ports beyond 1433 for ADO.NET 4.5 article, Firewall port 1433 is to be used.

In **SPN Configuration** window, you can select between three options: **Auto-Create SPN**, **Use Existing Run As Profile** and **Enter SPN Manually**.



Auto-Create SPN: Azure SQL MP Library creates a new Azure Service Principal Name automatically (using Azure REST API - see Azure REST API Reference article). Then, a new Run As Account will be created with this SPN.

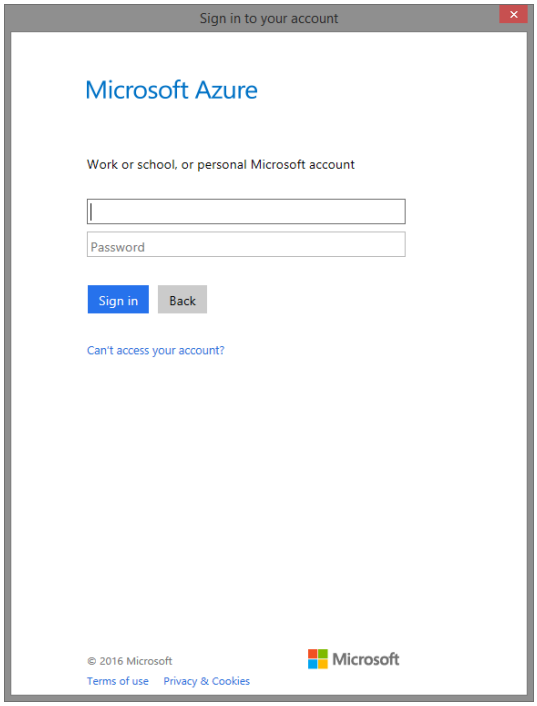
Enter SPN Manually: You have your own SPN (e.g. configured by PowerShell) and enter it manually; then, a new Run As Account will be created with this SPN credentials.

Use Existing Run As Profile: You have already had configured a Run As Profile with appropriate SPN credentials.

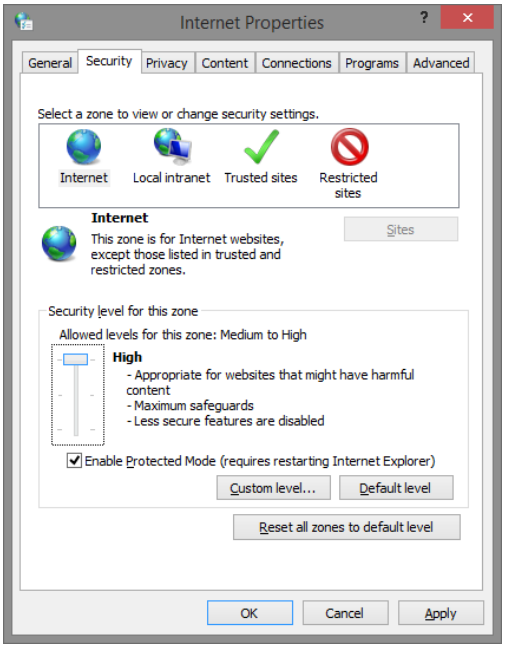
Therefore, the concepts are the same; the difference is in the input ways only.

Note: If you want to use T-SQL for monitoring, make sure that the corresponding box is checked in this window (this box is checked by default).

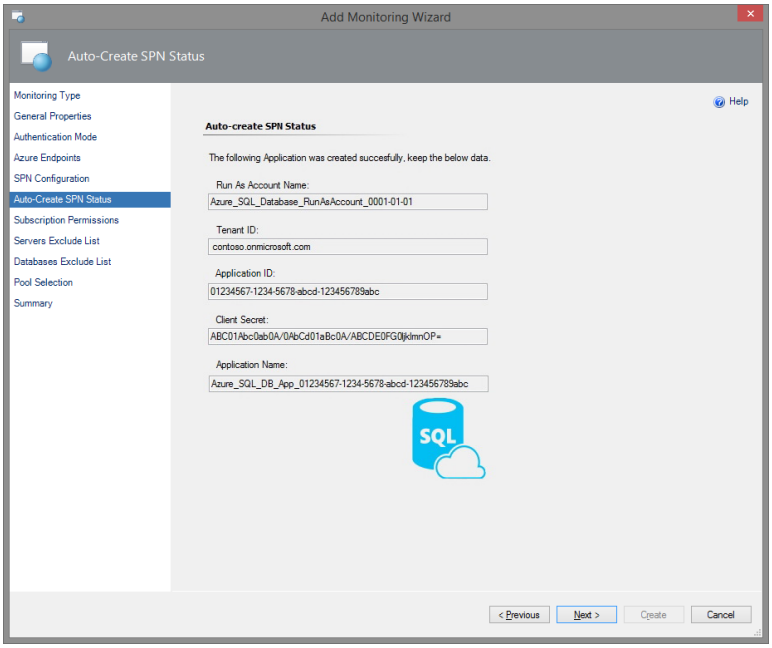
If you select **Auto-Create** SPN option, Microsoft Azure sign-in window will be displayed after clicking the **Next** button. In this window, fill in your work, school or personal Microsoft account credentials and click the **Sign in** button.



Note: You may receive Internet security alerts on this step. To solve this issue, go to Security section of the Internet Properties and lower the security level for the Internet zone.

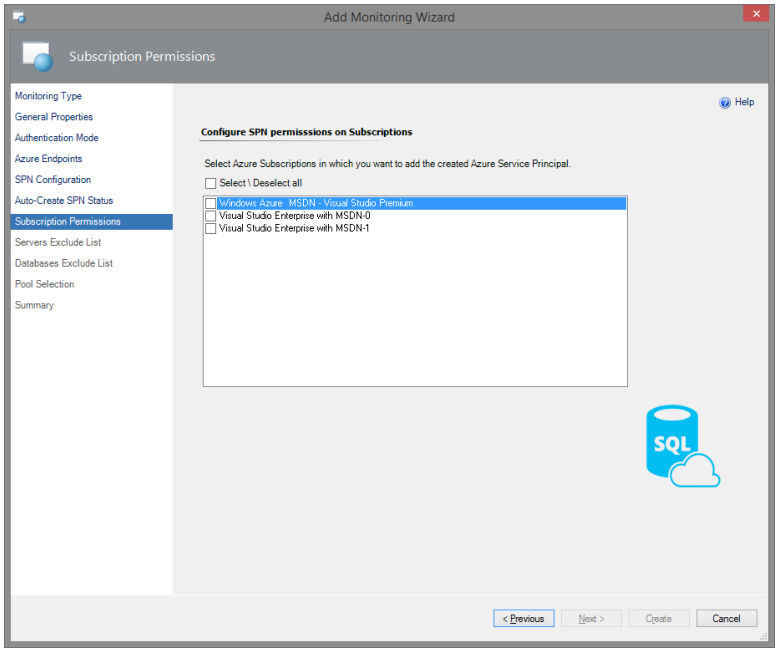


Upon successful creation of the application, the corresponding authentication data will be displayed in **Auto-Create SPN Status** window.

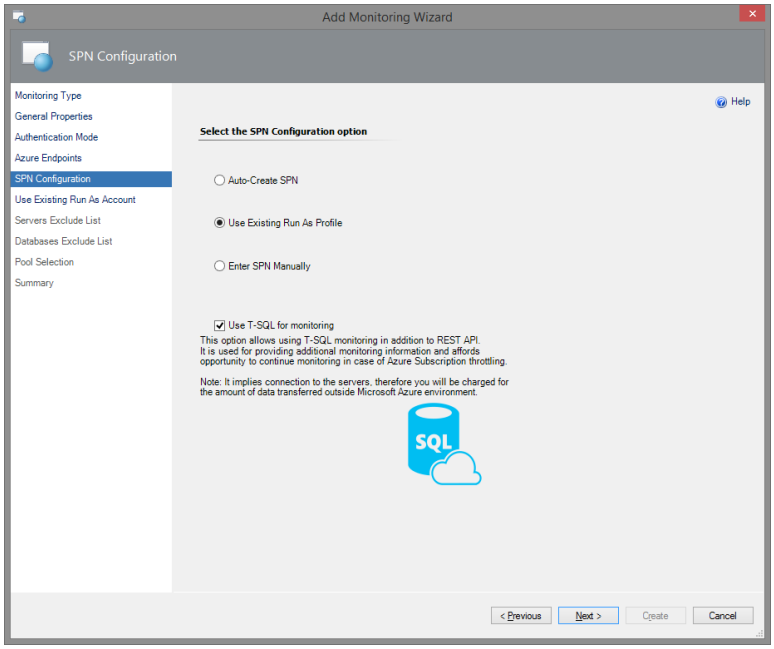


Important: it is strongly recommended to save this data for further usage!

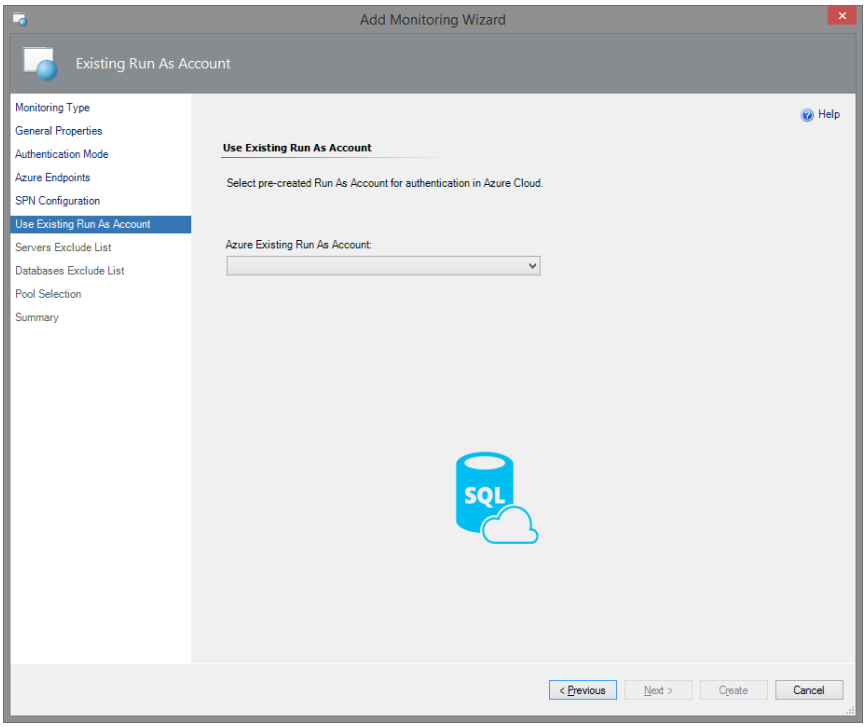
In Subscription Permissions window, select Azure Subscriptions in which you want to add the created Azure Service Principal.



If you want to use an existing Run As profile, you should select the corresponding option in **SPN Configuration** window.

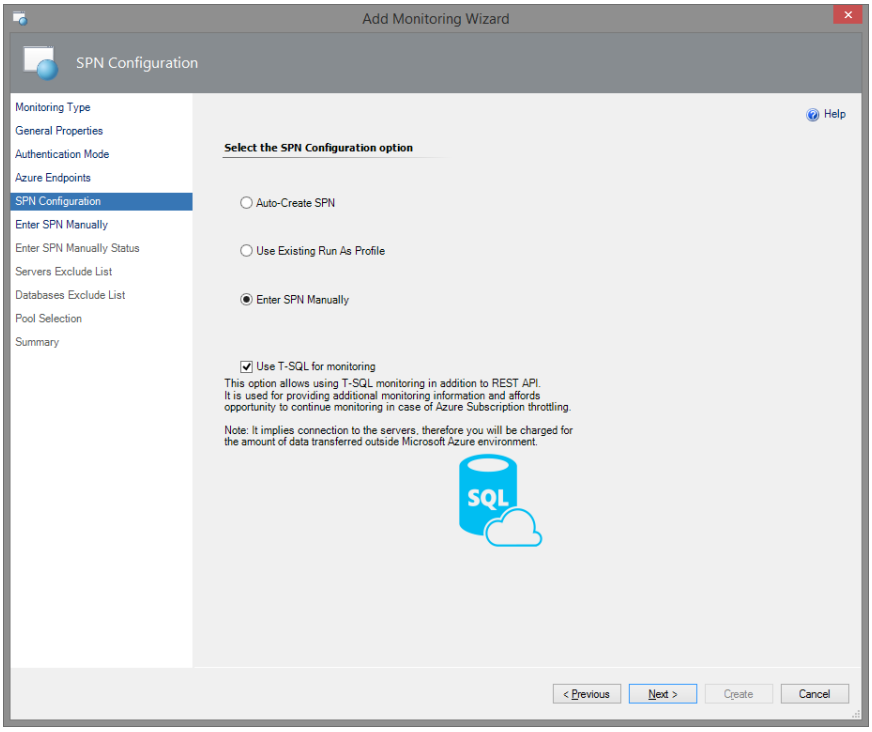


In this case, upon clicking the **Next** button, **Use Existing Run As Account** window will be displayed.

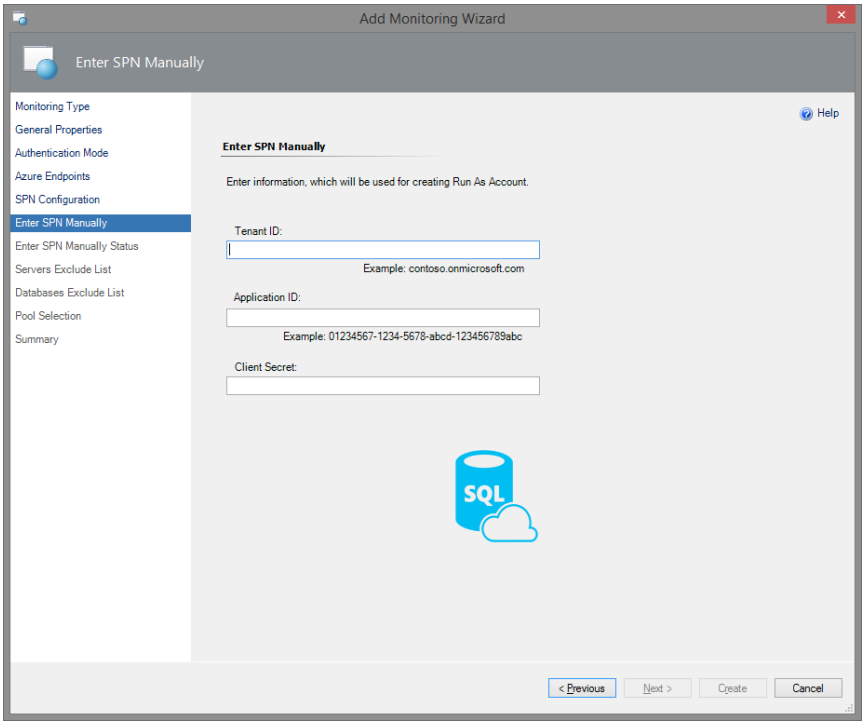


In this window, select an existing Run As Account associated with Azure Service Principal in the drop-down menu. This Run As Account will be used for authentication in Azure Cloud.

If you already have an SPN and want to use it for the creation of the Run As Account, you should select the corresponding option in **SPN Configuration** window.



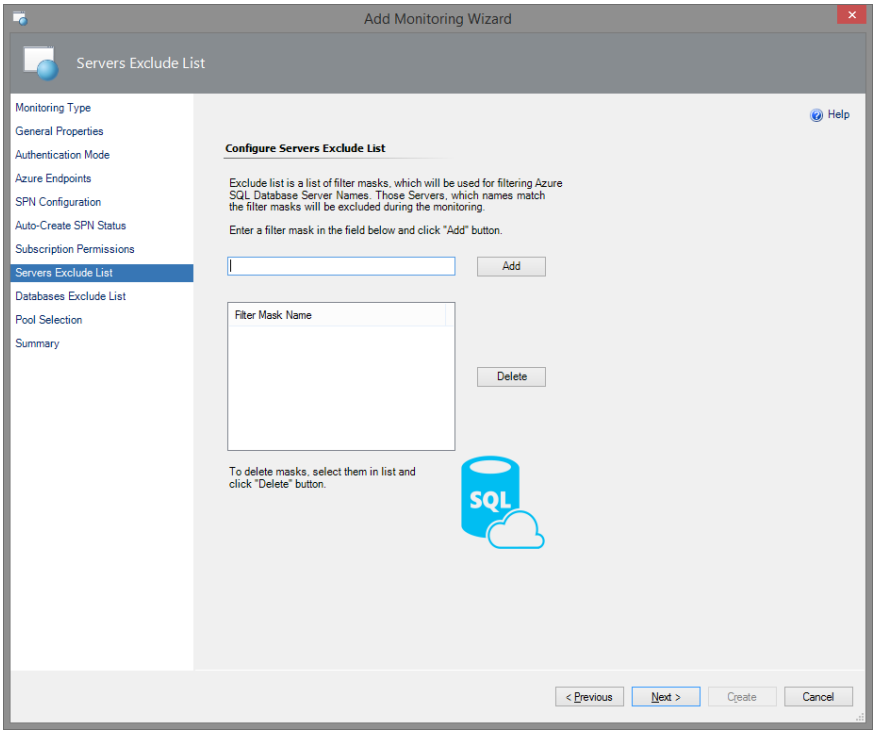
In this case, upon clicking the **Next** button, **Enter SPN Manually** window will be displayed.

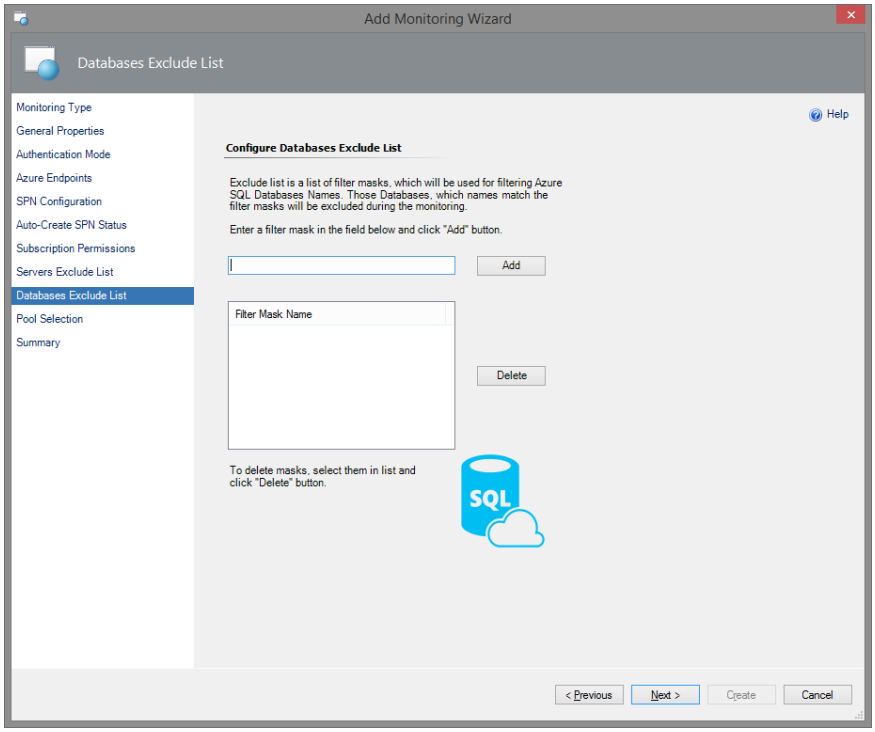


In this window, enter your SPN information in the corresponding fields. This information will be used to create a Run As Account for authentication in Azure Cloud.

Note: If necessary, you can easily create and configure a new Azure Active Directory Application and Service Principal Name by means of Azure PowerShell. Please review the corresponding article to obtain all the necessary information.

In the next two windows of the Wizard, you should configure **Server Exclude List** and **Database Exclude List**.





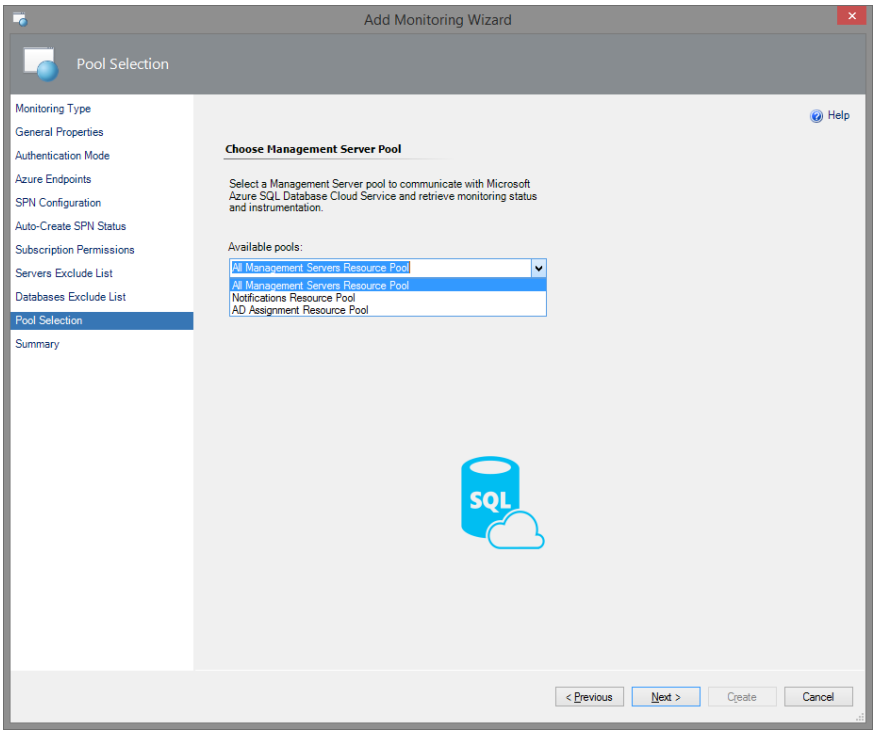
Note: the following Azure Portal specifics must be taken into consideration:

- A server name can contain only lowercase letters, numbers, and '-' character, but cannot start from or end with a \-\ character or contain more than 63 characters.
- A database name cannot end with '.' or ' ' characters, contain '<,>,*,%,&,:,\,/,?' or control characters, and can't have more than 128 characters.

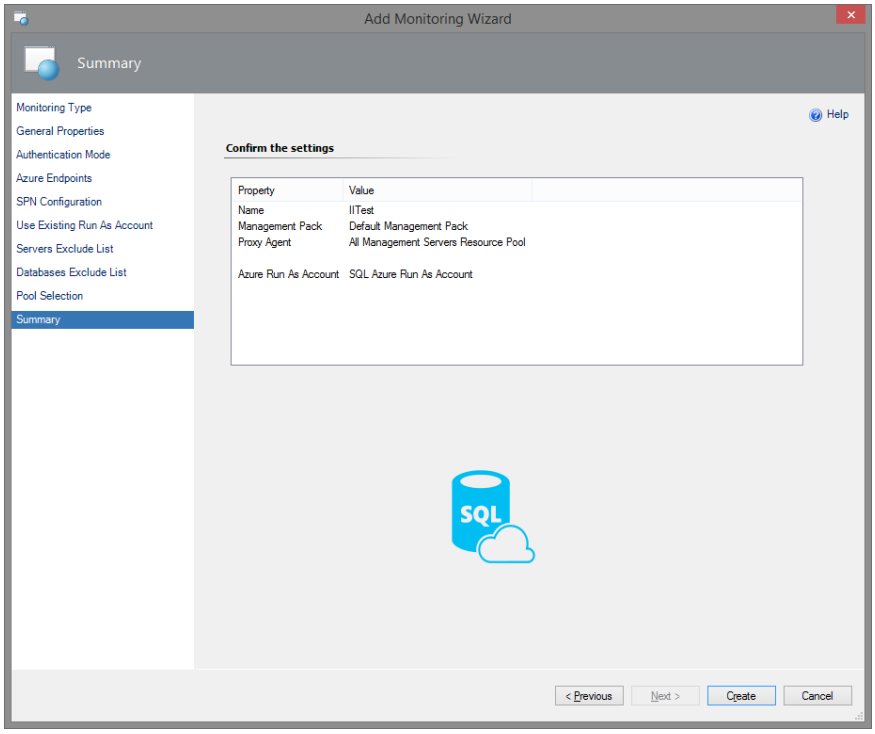
Note: Server Exclude List filter mask ignores whitespaces.

To add a mask, which will be used for filtering Azure SQL Databases Names, enter a filter mask in the field below and click the **Add** button. You can also delete the previously added masks by selecting them from the list and clicking the **Delete** button.

In the next window, you should select a Management Server Pool to communicate with Microsoft Azure SQL Database Cloud Service and retrieve the monitoring status and instrumentation. Select the pool from the corresponding drop-down list and click the **Next** button.

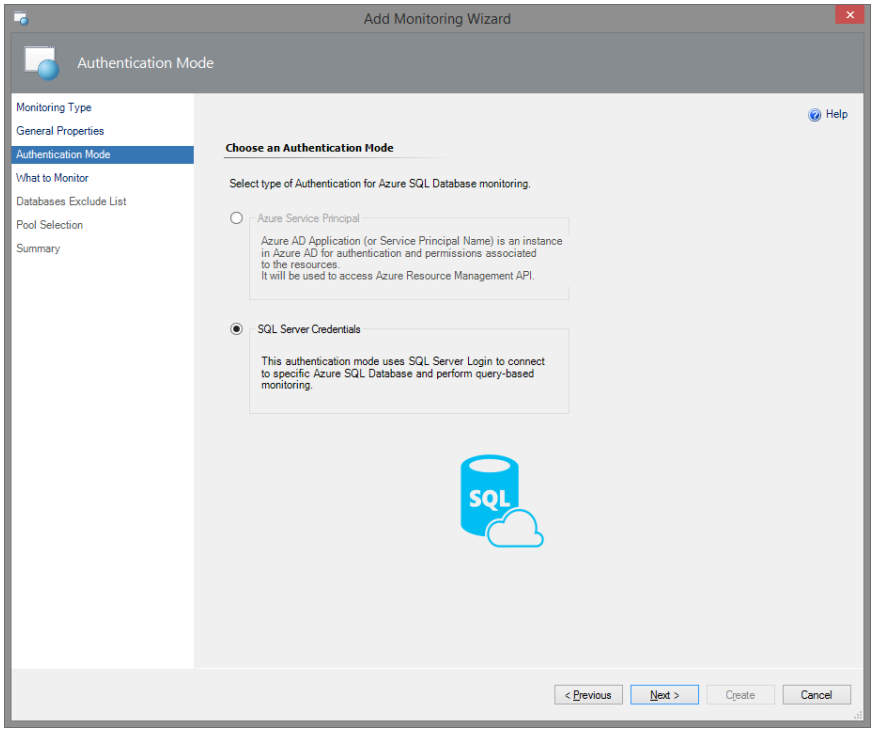


To complete the monitoring configuration, check the applied settings and click the **Create** button on in the **Summary** window of the Wizard.

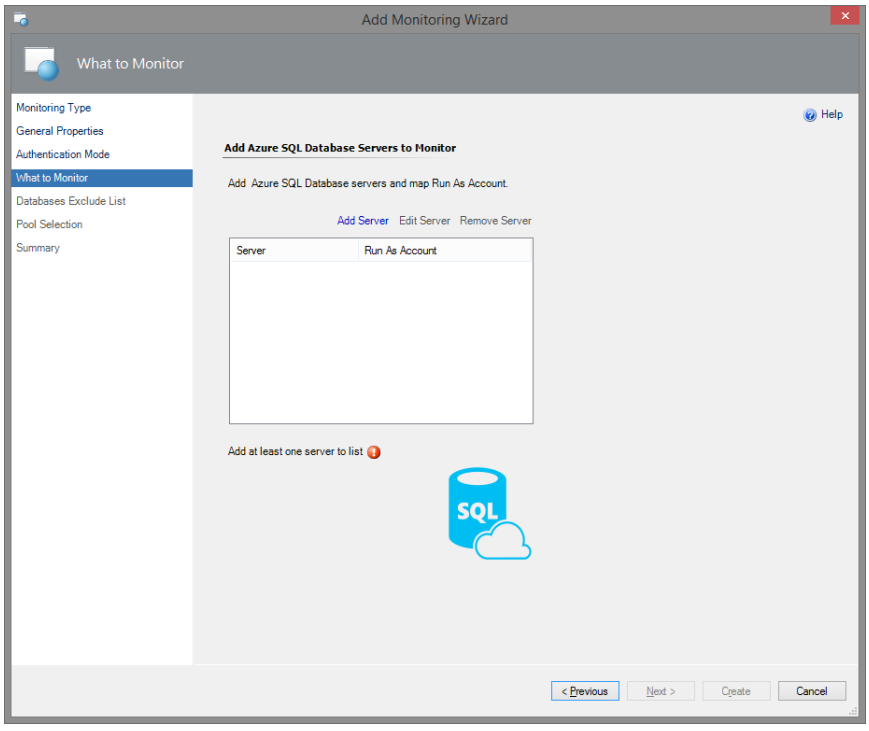


Azure SQL Server Credentials Authentication Mode

If you select **Azure Server Credentials** authentication mode, choose the corresponding option in Authentication Mode window.

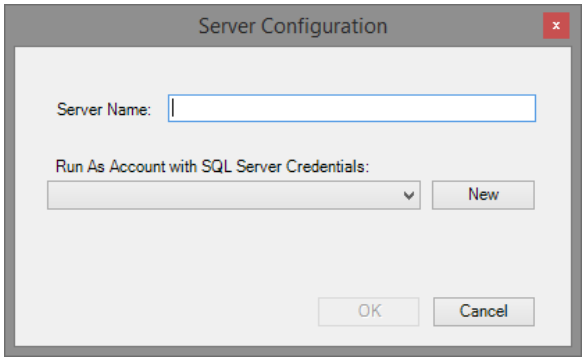


Upon clicking the **Next** button, **What to Monitor** window will be displayed.



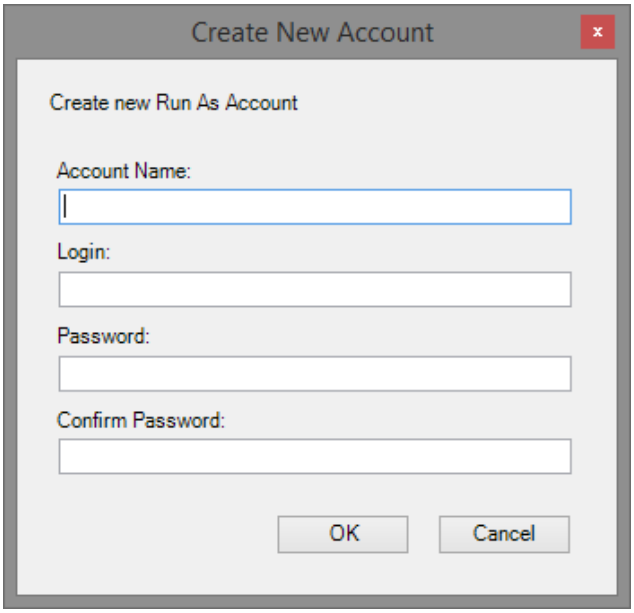
In this window, add Azure SQL Database servers you want to monitor and map the corresponding Run As Account associated with SQL Server Credentials. On this step, you can add, edit and remove the

servers. To add a server, click the corresponding button. As a result, Server Configuration window will be displayed.



Fill in the server name, select Run As Account with SQL Server credentials and click the **OK** button.

Note: If necessary, you can create a new Run As Account by clicking the **New** button.



In the corresponding window, enter your new Run As Account name and credentials of the SQL server you want to monitor.

Note: If you need to create a new SQL Server authentication login, the corresponding article to obtain all the necessary information.

The rest configuration steps are the same as in the section above.

Create a New Management Pack for Customizations

The Microsoft Azure SQL Server Monitoring management pack is sealed, so it is not possible to change any of the original settings in the management pack file. However, it is possible to create a customization, such as overrides or new monitoring objects, and save them to a different management pack. By default, the Operations Console saves all customizations to the default management pack. As a best practice,

instead, change the default and save the customizations in separate management packs for each sealed management pack you want to customize.

Creating a new management pack for storing overrides has the following advantages:

- It simplifies the process of exporting customizations that were created in your test and pre-production environments to your production environment. For example, instead of exporting the default management pack that contains customizations from multiple management packs, you can export just the management pack that contains customizations of a single management pack.
- It allows you to delete the original management pack without first needing to delete the default management pack. A management pack that contains customizations is dependent on the original management pack. This dependency requires you to delete the management pack with customizations before you can delete the original management pack. If all of your customizations are saved to the default management pack, you must delete the default management pack before you can delete an original management pack.
- It is easier to track and update customizations to individual management packs.

For more information about sealed and unsealed management packs, see Management Pack Formats article. For more information about management pack customizations and the default management pack, see About Management Packs article.

To Create a New Management Pack for Customizations

1. Open the Operations Console, and then click the **Administration** button.
2. Right-click **Management Packs,** and then click **Create New Management Pack**.
3. Enter a name (for example, “Microsoft Azure SQL Database Customizations”), and click **Next**.
4. Click **Create**.

Customize Microsoft Azure SQL Database Management Pack

See Disabled Monitors section for a list of disabled monitors you can enable to generate alerts when performance collection numbers exceed the specified thresholds.

To avoid unnecessary alerts, when you enable the monitors disabled by default, be sure to adjust the thresholds of those monitors to values, which make sense for your databases.

Security Considerations

Run As Accounts

For each set of unique credentials used to monitor Microsoft Azure SQL Database cloud services, create a separate *simple* or *basic* authentication Run As account.

For more information about Run As accounts, see Create Microsoft Azure SQL Database Run As Accounts section above.

Low-Privilege Configuration

Since Microsoft Azure SQL Database service evolving very fast – some of the permissions required for monitoring may change over time; thus it is recommended to use an Administrator account.

The following steps will allow you to set up a low-privilege account to monitor the service:

1. Connect to the *master* database and create server-level credentials for low-privilege monitoring user by means of the following query:

   ```
   CREATE LOGIN MonitoringUser WITH PASSWORD = <password>
   ```

2. Connect to *master* database and map server-level login to the database user by executing the following query:

   ```
   CREATE USER MonitoringUser FOR LOGIN MonitoringUser WITH DEFAULT_SCHEMA = sys
   ```

3. In every user database (excluding *master* members), map server-level login to the database user and grant it VIEW DATABASE STATE permission by executing the following command:

   ```
   CREATE USER MonitoringUser FOR LOGIN MonitoringUser WITH DEFAULT_SCHEMA = sys
   GO
   GRANT VIEW DATABASE STATE TO MonitoringUser
   ```

Use this *MonitoringUser* in Microsoft Azure SQL Database Run As Account.

Important!

If you are using Custom User Query Monitoring, you must grant all required permissions to this account as well. Custom query monitors will be using these credentials to execute all queries.

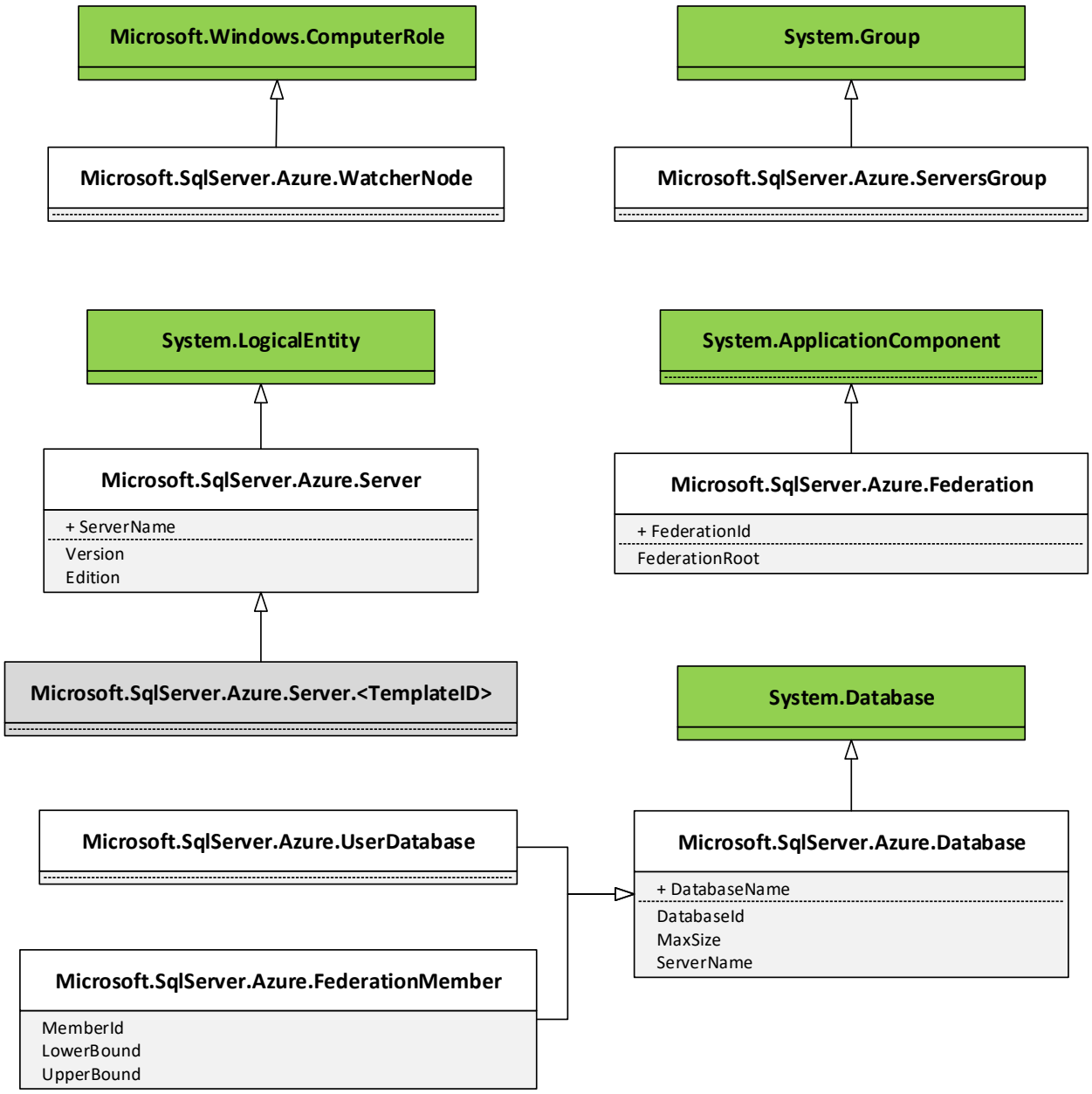
Performance and Billing Considerations

This management pack retrieves data from Microsoft Azure SQL Database, which means you will be charged for the amount of data transfer outside the Microsoft Azure environment. Although management pack queries designed to execute fast and retrieve a small amount of data, it is recommended to keep monitoring and discovery intervals as high as possible to reduce load and amount of data transferred.

If you are not interested in one or few metrics collected by the management pack – consider disabling them.

Understand Microsoft Azure SQL Database Management Pack

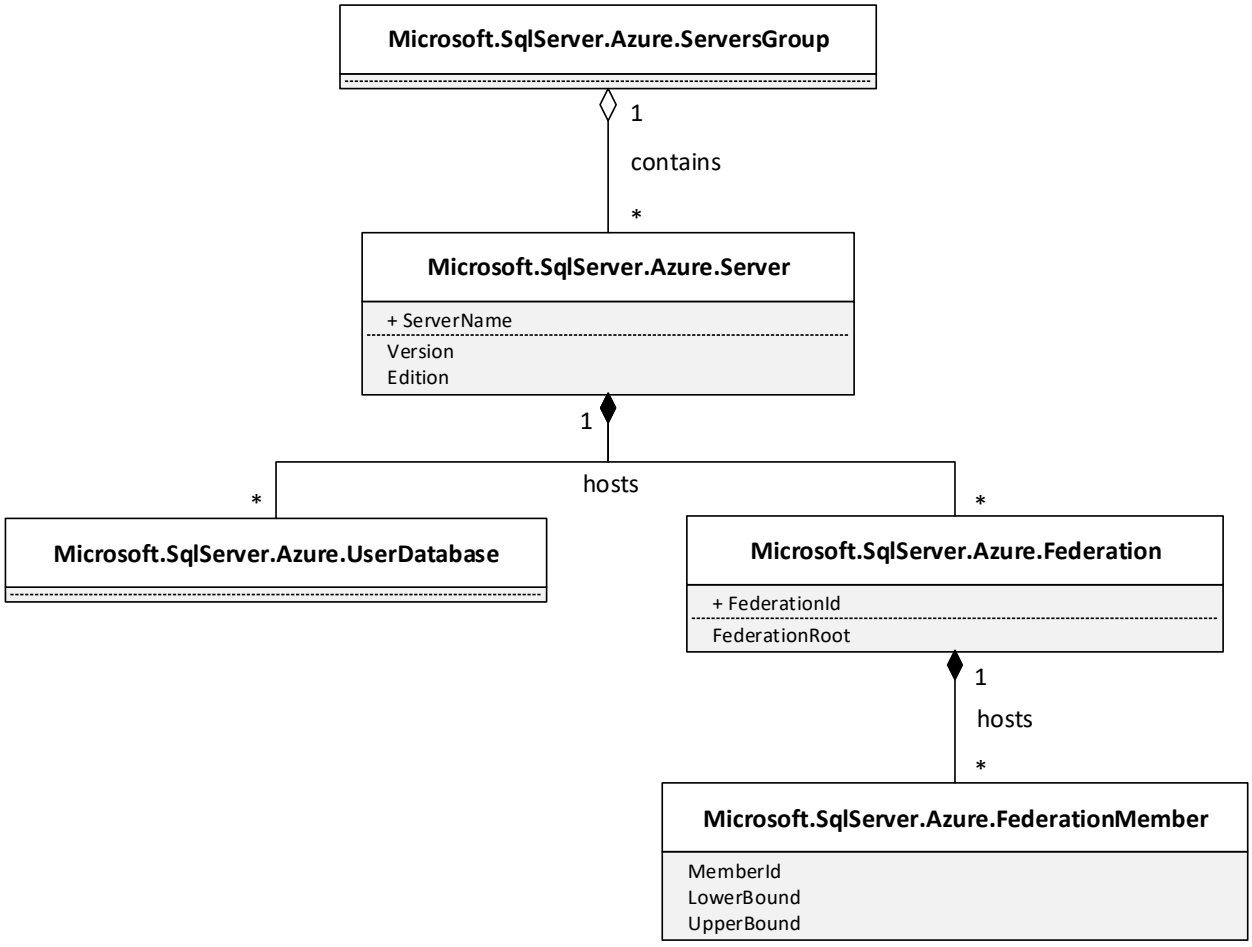
Classes and Inheritance Diagram



This diagram shows the classes used or defined in the management pack. The green classes are provided by the System Center Operations Manager Infrastructure. The white classes are defined by the Microsoft Azure SQL Database Monitoring management pack. The grey classes are created dynamically by the Add Monitoring Wizard for Microsoft Azure SQL Database.

Note: SQL Azure Federation and Federation member workflows are considered to be deprecated within this management pack.

Class Relationships



This diagram shows hosting and containment relationships defined in the Microsoft Azure SQL Database Monitoring management pack.

Note: SQL Azure Federation and Federation member workflows are considered to be deprecated within this management pack.

Objects the Management Pack Discovers

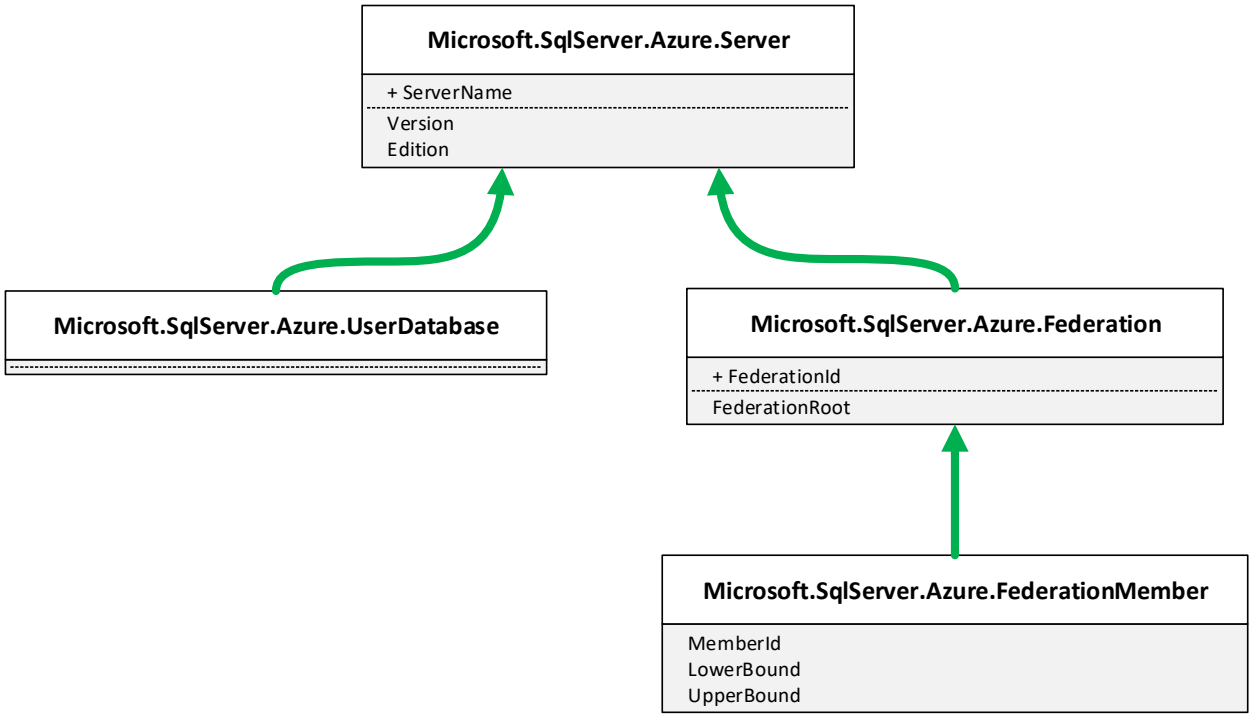
After using the **Add Monitoring Wizard** for Microsoft Azure SQL Database (as described in Microsoft Azure SQL Database Add Monitoring Wizard section) to discover Microsoft Azure SQL Database cloud service, the management pack will automatically discover all databases hosted in that cloud service.

Object types discovered by the management pack are described in the following table:

Object type	Discovered Automatically
Microsoft Azure SQL Database Cloud Service	No, use the Add Monitoring Wizard
Microsoft Azure SQL Database User Database	Yes

How Health Rolls Up

The following diagram shows how health rolls up across the classes defined by the management pack.



The management pack rolls up availability and performance health. The management pack does not define any configuration or security monitors, thus no rollups are defined in the management pack. If you want to extend the monitoring with custom configuration and/or security monitoring, you must manually add such rollups.

Note: SQL Azure Federation and Federation member workflows are considered to be deprecated within this management pack.

Key Monitoring Scenarios

Microsoft Azure SQL Database Management Pack includes a number of key monitoring scenarios that can be configured as described below. Detailed information about each specific monitor can be found in Appendix: Management Pack Objects and Workflows.

Note

The list is not intended to be a complete manifest of the management pack functionality.

Service Availability Monitoring

There is a monitor that tracks the availability of discovered Microsoft Azure SQL Database cloud services:

- State changes of the *master* database

This monitor is not considered noisy and does not require any special configuration.

Service Performance Monitoring

Currently, there is a single server performance monitor, which detects when the number of databases per server exceeds a specified threshold. By default, this monitor goes into warning state when 120 or more databases are created per server, and goes into the critical state when 135 or more databases are created per server. In some situations, these default values are not appropriate. For example, an application may be designed to use all 150 databases for Microsoft Azure SQL Database cloud service. When the default values would create noise, the monitor should be disabled, or the thresholds should be overridden, depending on the situation.

Note that database performance monitors roll up to service performance monitoring, which can affect the health state of the service.

Service Performance Collection

Currently, there is a single rule, which collects the number of databases hosted in each discovered Microsoft Azure SQL Database cloud service.

Database Availability Monitoring

There is a monitor that tracks the availability of the discovered databases:

- State changes of the database

This monitor is not considered noisy and does not require any special configuration.

Database Performance Monitoring

There are several monitors, which detect when resource consumption has exceeded a predefined limit. Almost all of these monitors are disabled by default, with the exception of the database free space monitor. To use these disabled monitors create an override, which adjusts the thresholds of the monitor to values appropriate for the database applications and then enable the monitor.

The database performance monitors detect:

- Excessive storage space consumed by each database
- Excessive resources consumed by database sessions
- Excessive resources consumed by database transactions

Database Performance Collection

There are several rules, which collect performance information about each discovered database. These rules collect information about:

- Network usage
- The amount of resources consumed by database sessions
- The amount of resources consumed by database transactions
- Disk space consumed by each database

Custom User Query Monitoring

In addition to standard health and performance monitoring of the Microsoft Azure SQL Database cloud service, you can define custom SQL queries to be executed. This allows you to monitor your application-specific health.

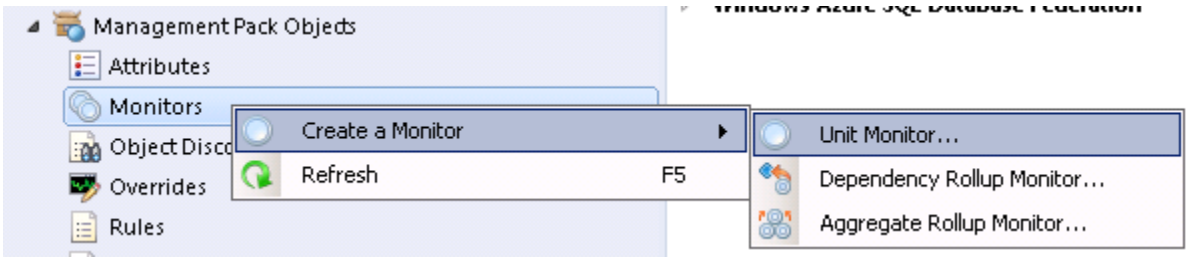
Management pack supports two- and three-states query-based monitors.

Before using custom query monitors, make sure that credentials used for monitoring has all required permissions to execute the queries (see Create Microsoft Azure SQL Database Run As Accounts section for more details).

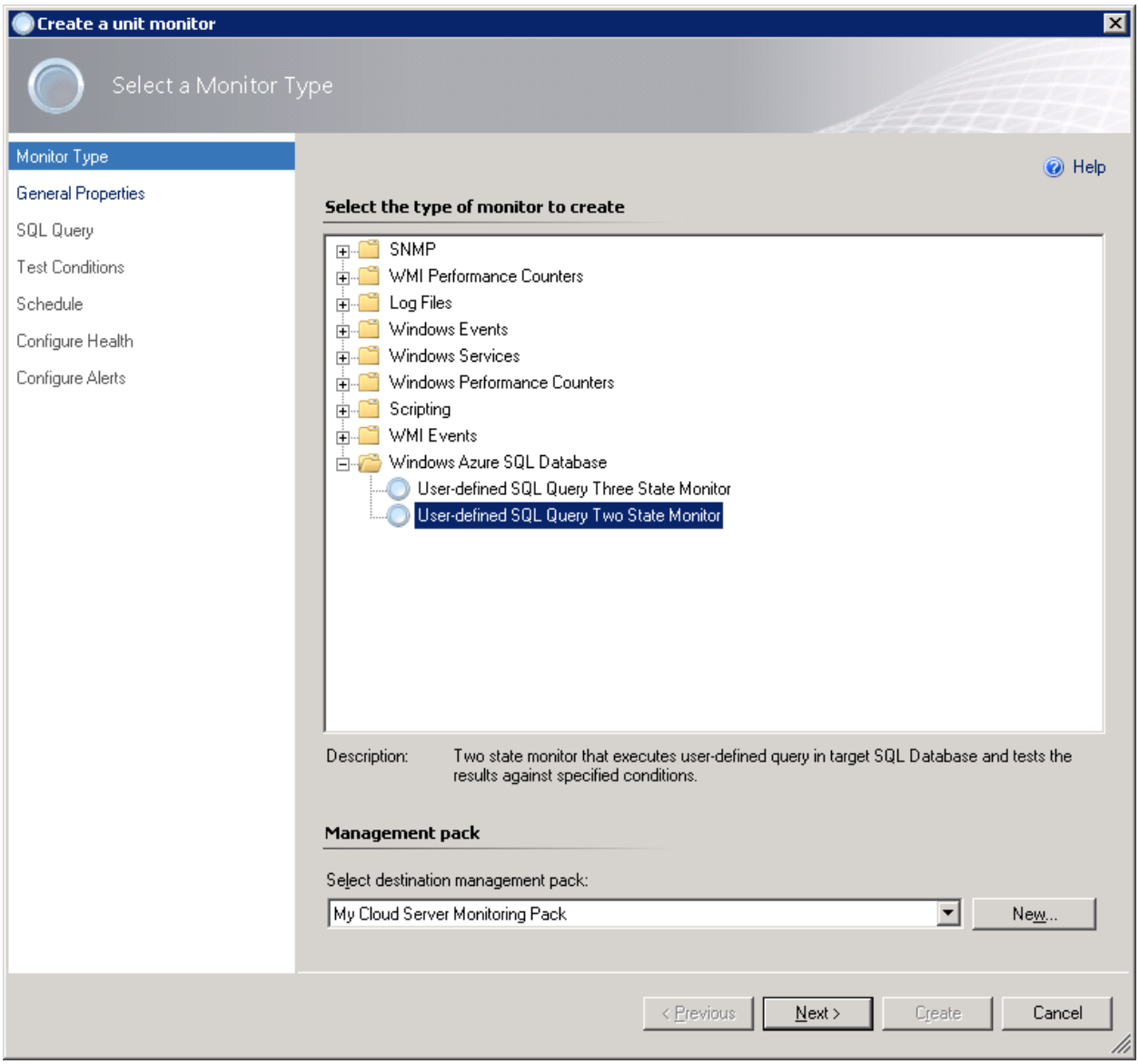
Two-State Query Monitor

To add a new two-state custom query monitor, perform the following steps:

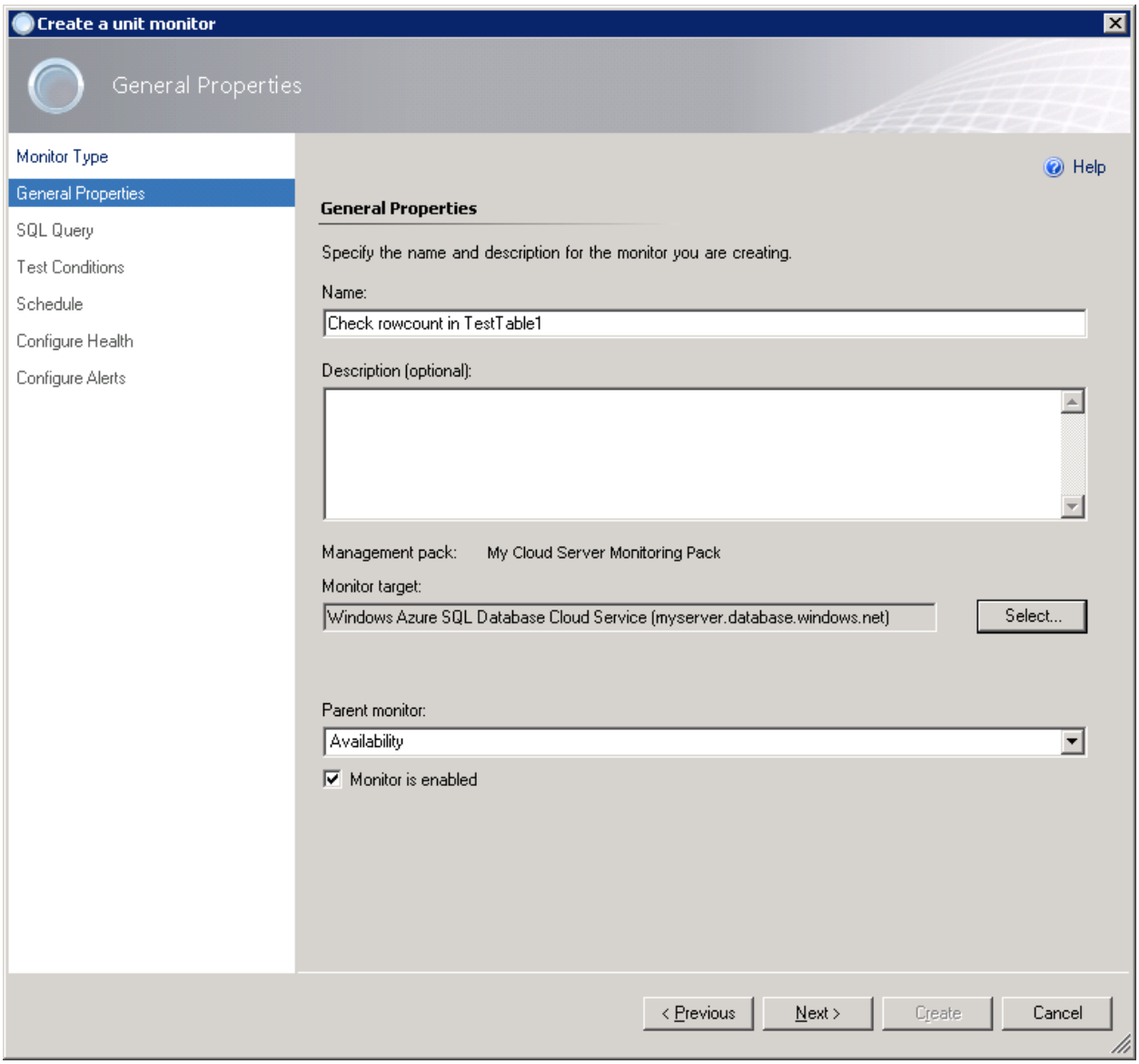
1. In SCOM Console, navigate to **Authoring | Management Pack Objects,** right-click **Monitors** and select **Create a Monitor | Unit Monitor…**



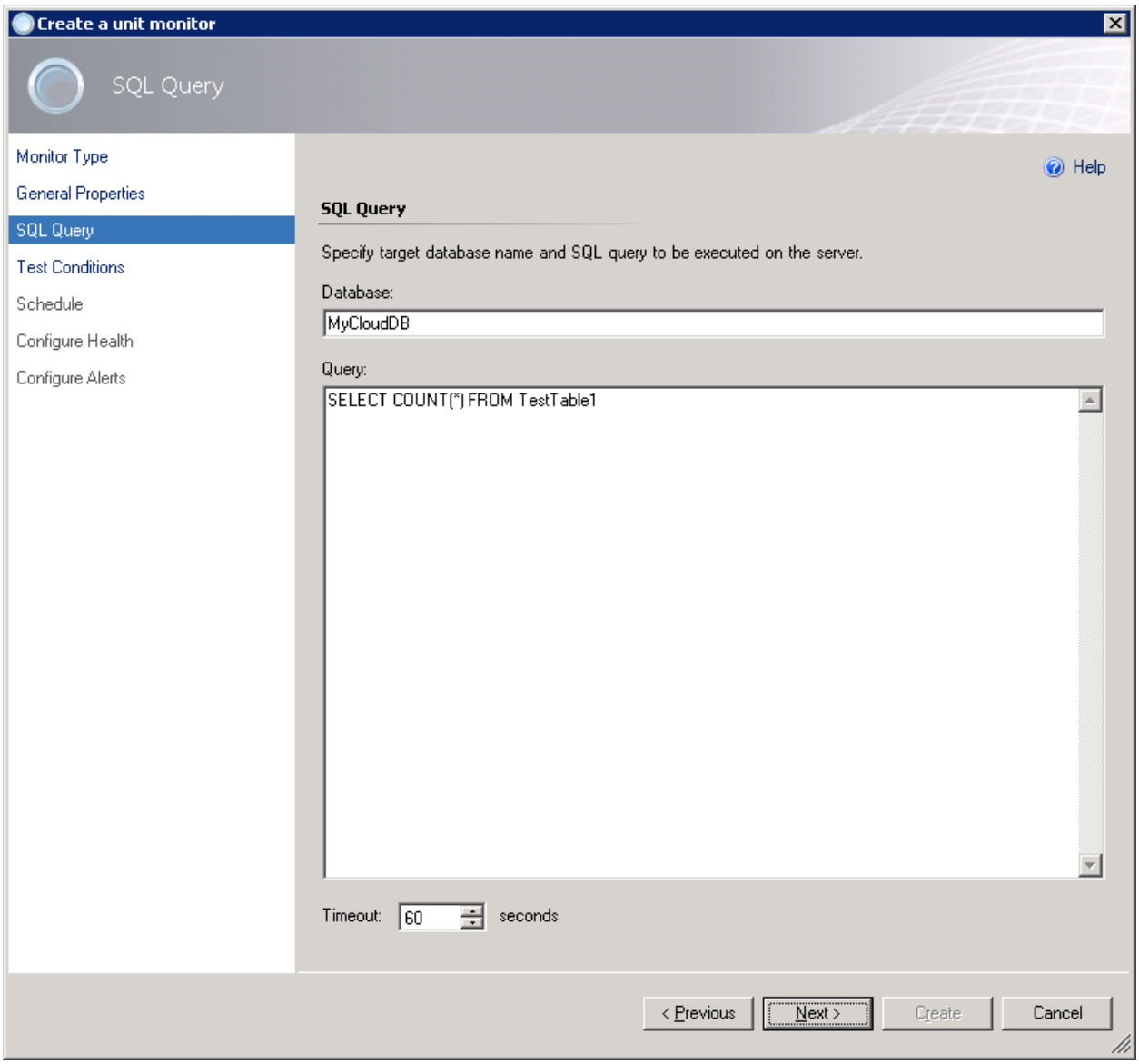
2. On the **Monitor Type** page, select **Microsoft Azure SQL Database | User-defined SQL Query Two State Monitor**. Select destination management pack and click **Next**.
   If you want to create a custom query monitor for a specific Microsoft Azure SQL Database cloud service, then you must select a management pack with the template used to monitor this service. If you want to add a query to all Microsoft Azure SQL Database services, you can store the monitor in any management pack.



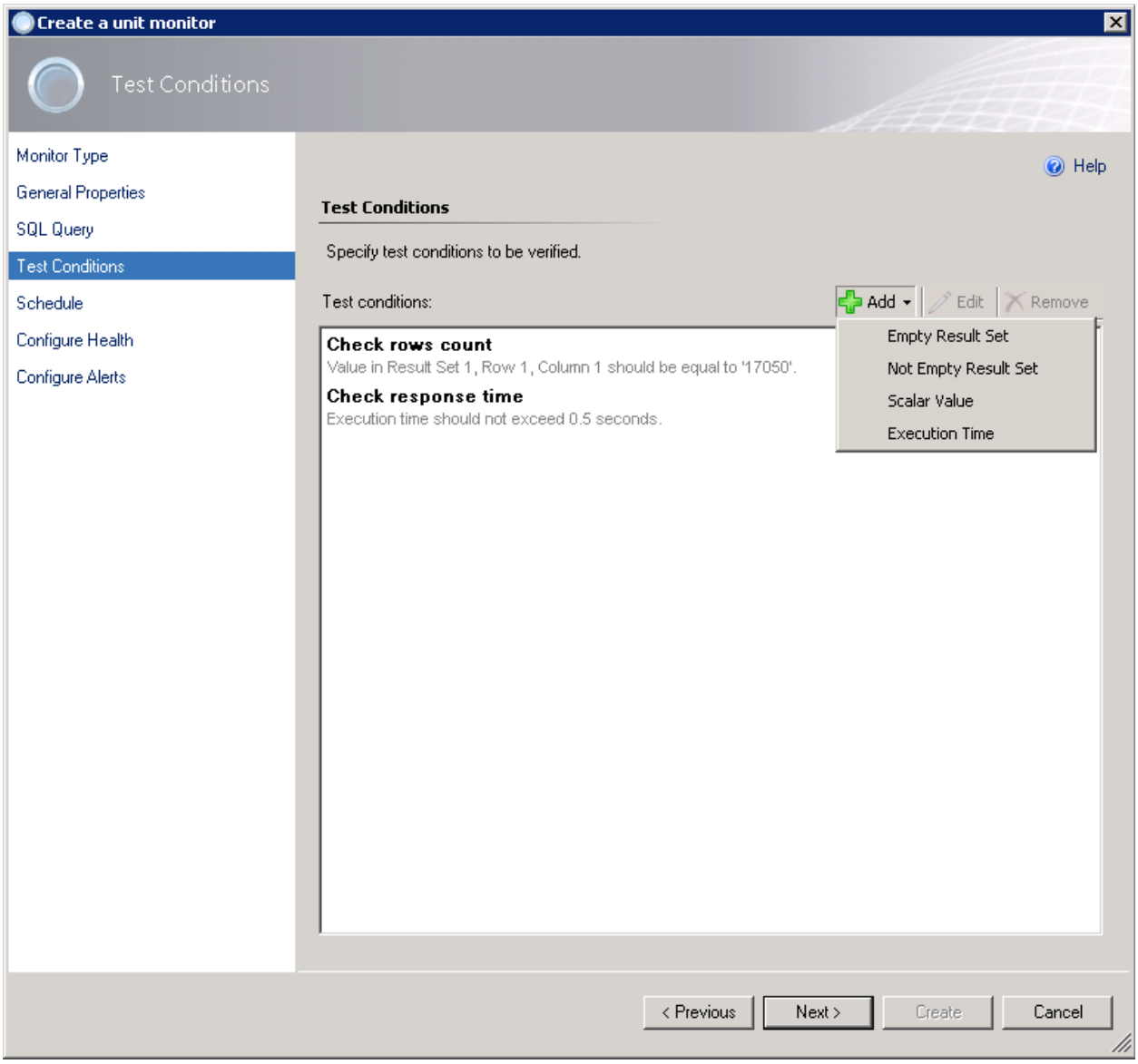
3. On the **General** page, provide monitor **Name**, optional **Description**, select **Monitor target** and **Parent monitor**. Click **Next**.
   If you selected to save your new monitor in the management pack containing one or more Microsoft Azure SQL Database templates, then you will be able to pick one of Microsoft Azure SQL Database services, monitored by the templates in this management pack. Otherwise, only base **Microsoft Azure SQL Database Cloud Service** will be available as a target. Selecting **Microsoft Azure SQL Database Cloud Server** means all cloud services you monitor will be executing your query.



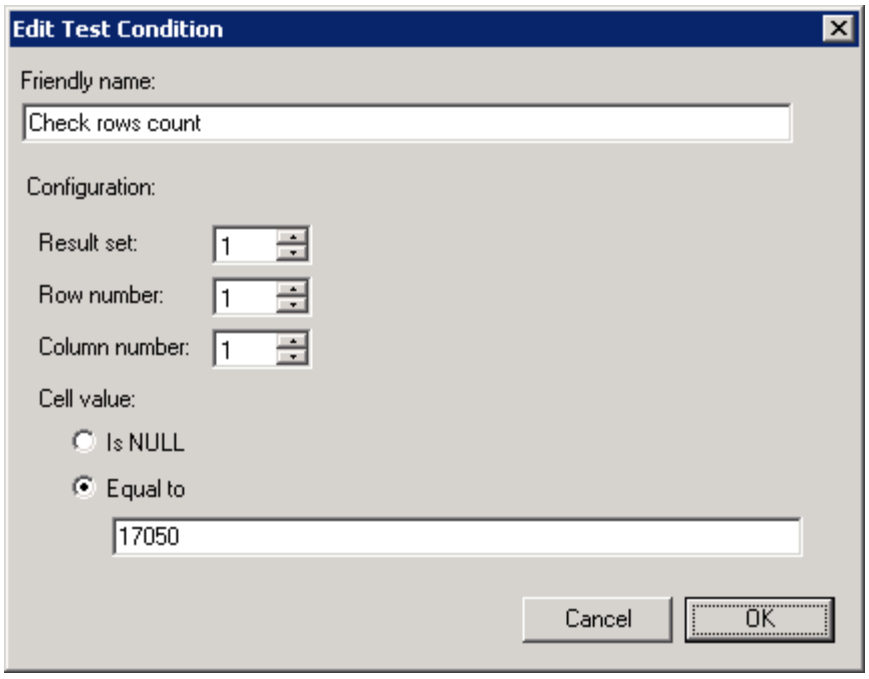
4. On the **SQL Query** page, you must provide the **Database** name, **Query** text, and **Timeout** (in seconds).



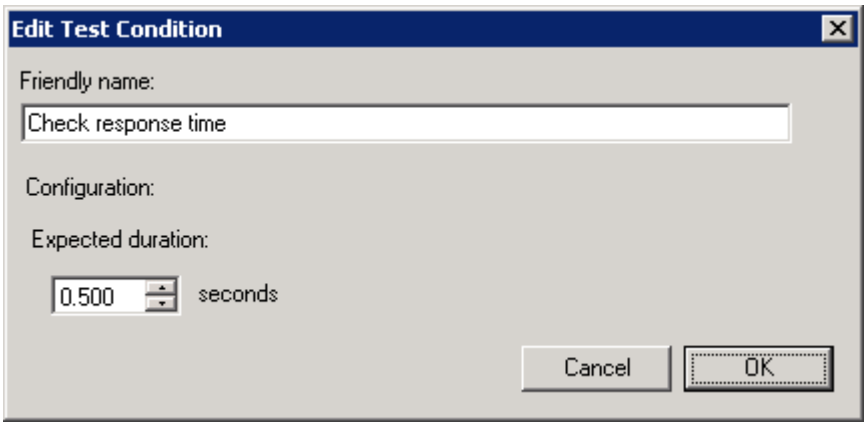
5. On the **Test Conditions** page, add one or more **Test conditions** to verify query results.
   To add a new condition, click **Add** and pick one of the available conditions from the drop-down list:
   - **Empty Result Set**
     Checks if the specified result set returned by the query is empty.
   - **Not Empty Result Set**
     Checks if the specified result set returned by the query is not empty.
   - **Scalar Value**
     Checks scalar value in the specified cell of the result set. Only equal comparison is available at this moment; if you need complex logic, you must cover that by the query.
   - **Execution Time**
     Checks execution duration of the query.



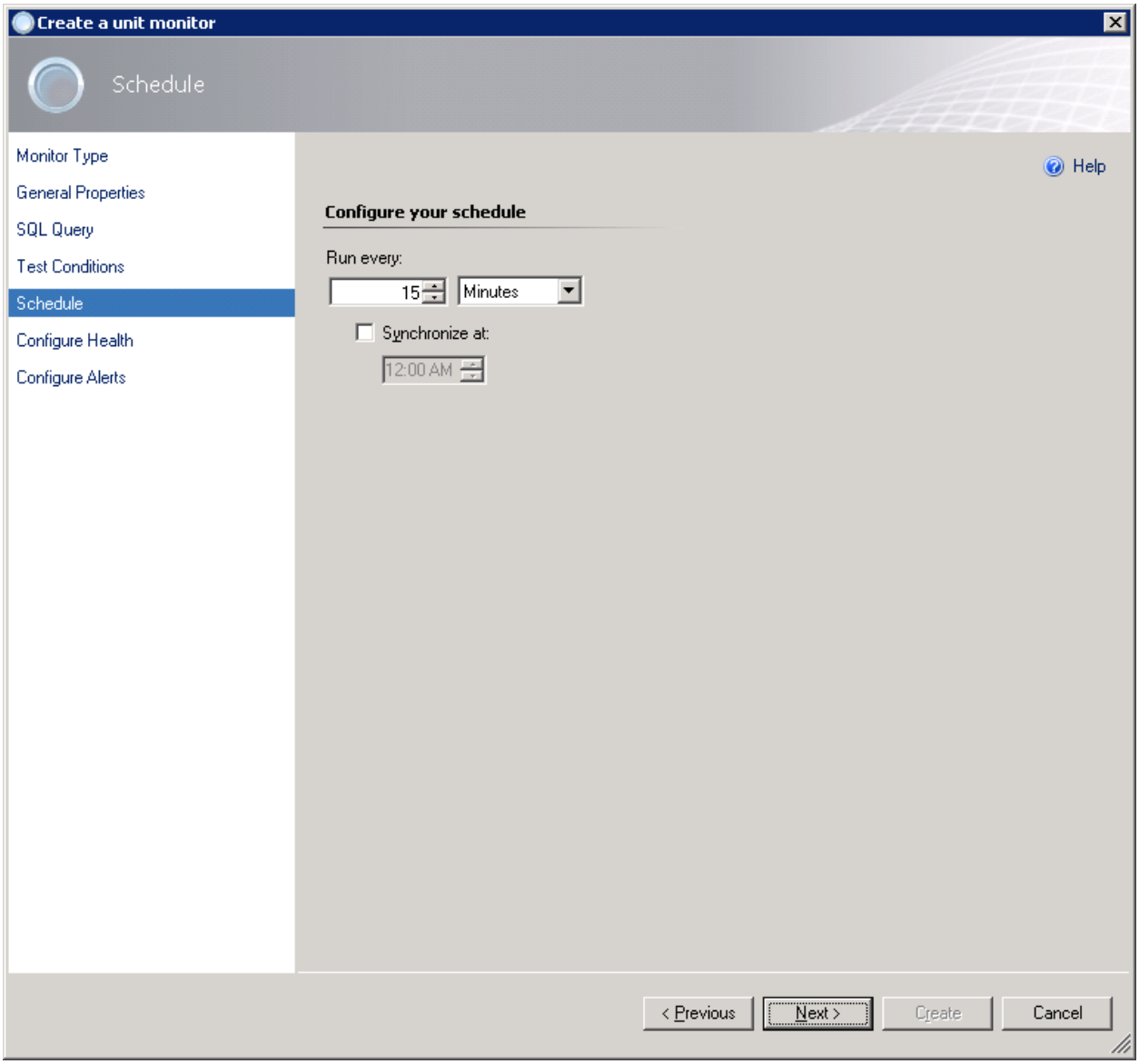
6. When you are adding the condition, you must specify the **Friendly name** and the entire **configuration** required for a specific check to be performed.
   We will be using **Scalar Value** condition to verify rows count in the *TestTable1*.



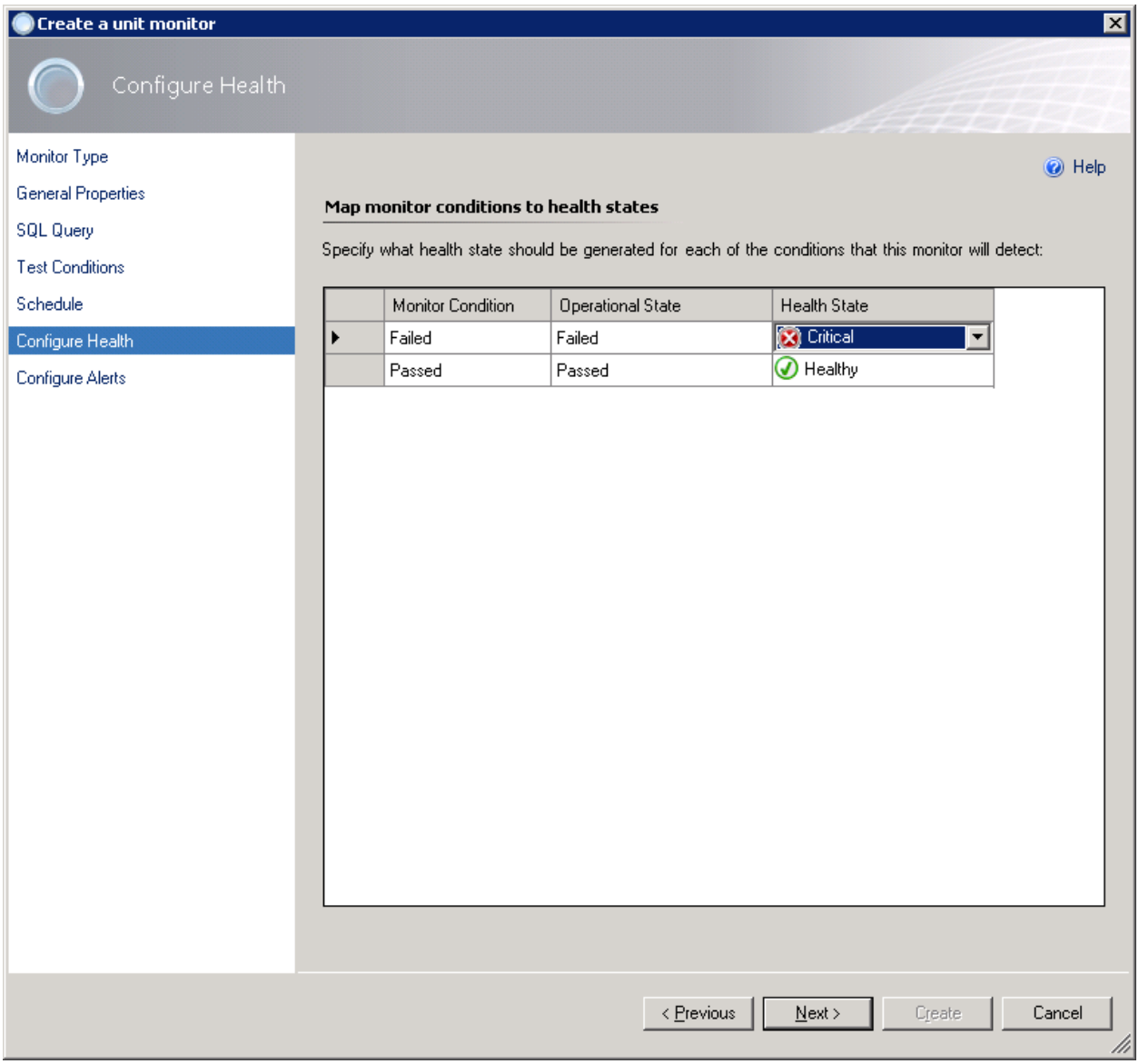
7. You can have more than one condition. It is useful to add **Execution Time** condition to all tests to check how your Microsoft Azure SQL Database service is performing.



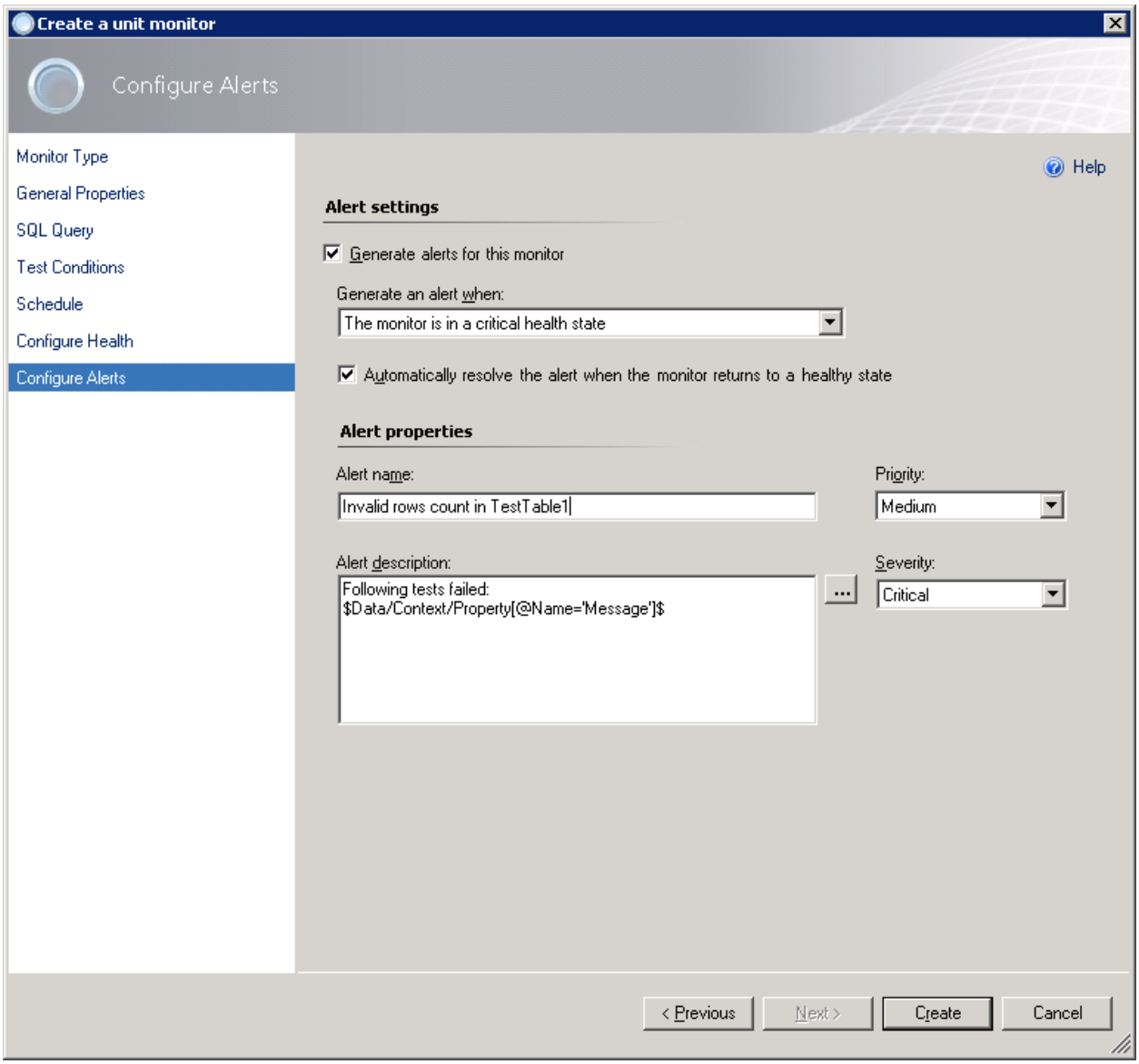
8. When you are done adding all required conditions, click **Next**.
9. On the **Schedule** page, you must specify how frequently your query will be executed.



10. On the **Configure Health** page, you can select what health state should be generated by the monitor.

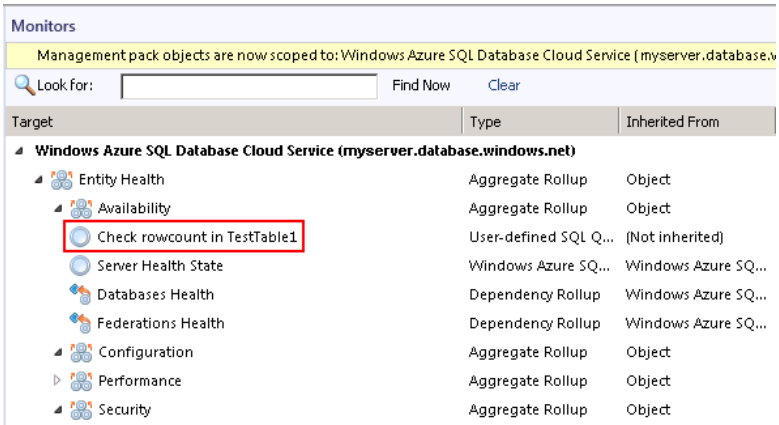


11. On the **Configure Alerts** page, you can set up an alert name and description to be shown in case if one or more test conditions fails.
Use *$Data/Context/Property[@Name='Message']$* placeholder to show a list of failed tests in the alert description.



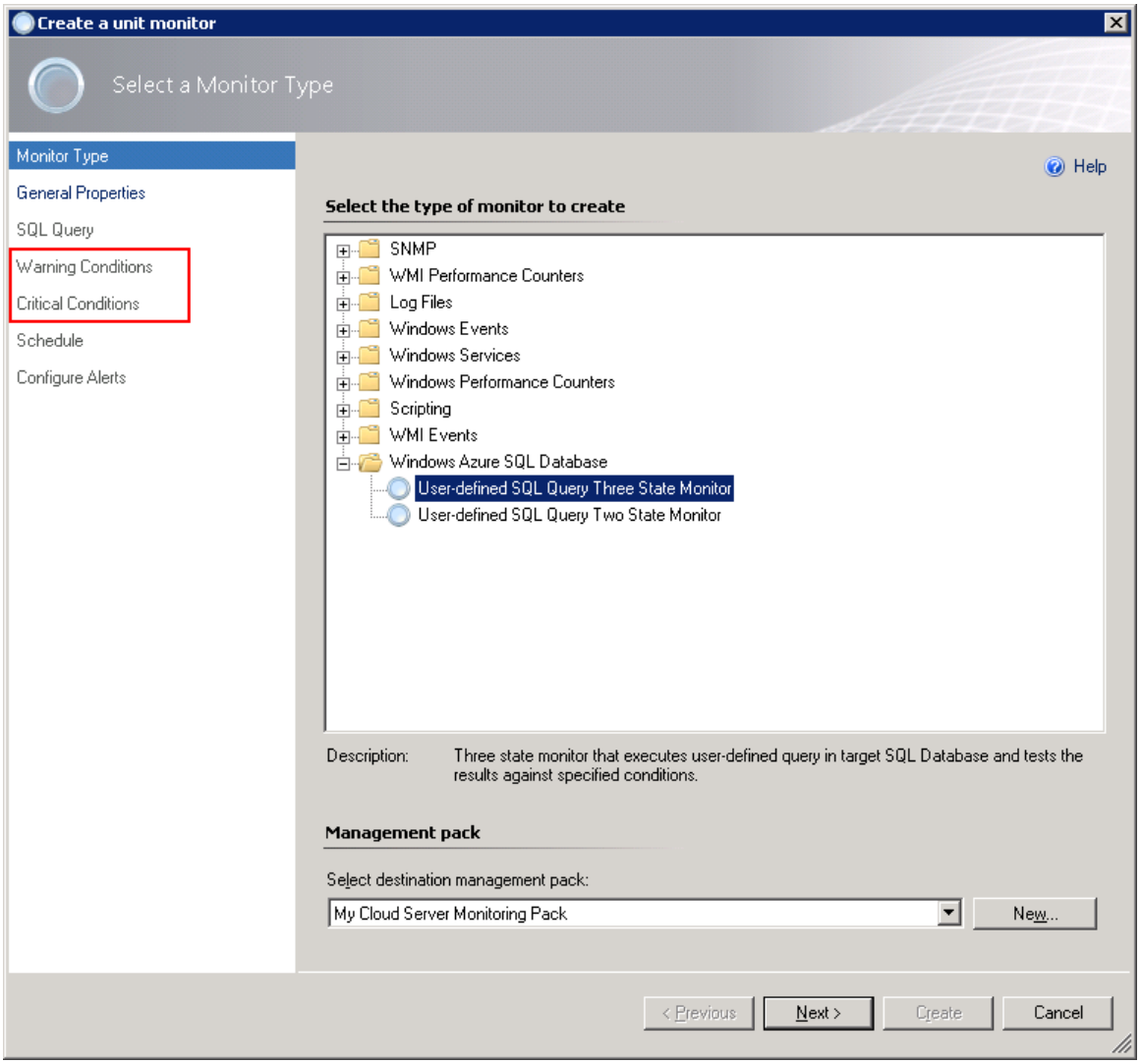
Click **Create** when you finish.

Now, you can see the new monitor available for your service:



Three-State Query Monitor

Adding a new three-state query monitor is similar to a two-state monitor. The main difference is that you must specify Warning and Critical sets of conditions.



Critical conditions will be verified first. If one or more critical conditions fail – the monitor will switch to critical state and warning conditions will not be verified.

For more information on how to setup query and conditions, see Two-State Query Monitor section above.

View Information in the Operations Console

You can observe a high-level view of object types in your Microsoft Azure SQL Database service.

A view can contain a lengthy list of objects. To find a specific object or group of objects, you can use the **Scope**, **Search**, and **Find** buttons on the Operations Manager toolbar. For more information, see Finding Data and Objects in the Operations Manager Consoles article.

The following views are provided with Microsoft Azure SQL Database management pack and are available under **Microsoft Azure SQL Database** node in the **Monitoring** pane of the Operations Console:

- Active Alerts
- Watcher Nodes
- Databases
  - Database State
- Performance
  - All Performance Data
  - Database Network
  - Database Sessions
  - Database Space
  - Database Transactions
- Servers
  - Server State
  - Servers Diagram

Database Views

The following table describes views reflecting the databases' health.

View Path	Description
Databases\Database State	Displays a list of the monitored databases and their current states. Double-click the health state icon for a database to launch a Health Explorer window for that database to locate the monitors, which are affecting the health state of the server, and investigate any issues. The **Detail View** pane displays the properties of the database selected above.
Performance\Database Network	The **Legend** pane displays a list of network-related counters for every monitored database. The chart illustrates the information selected in the **Legend** pane.
Performance\Database Sessions	The **Legend** pane displays a list of database sessions related counters for every monitored database. The chart illustrates the information selected in the **Legend** pane.

View Path	Description
Performance\Database Space	The **Legend** pane displays a list of disk space related counters for every monitored database. The chart illustrates the information selected in the **Legend** pane.
Performance\Database Transactions	The **Legend** pane displays a list of database transactions related counters for every monitored database. The chart illustrates the information selected in the **Legend** pane.

Server Views

The following table describes views reflecting cloud services health.

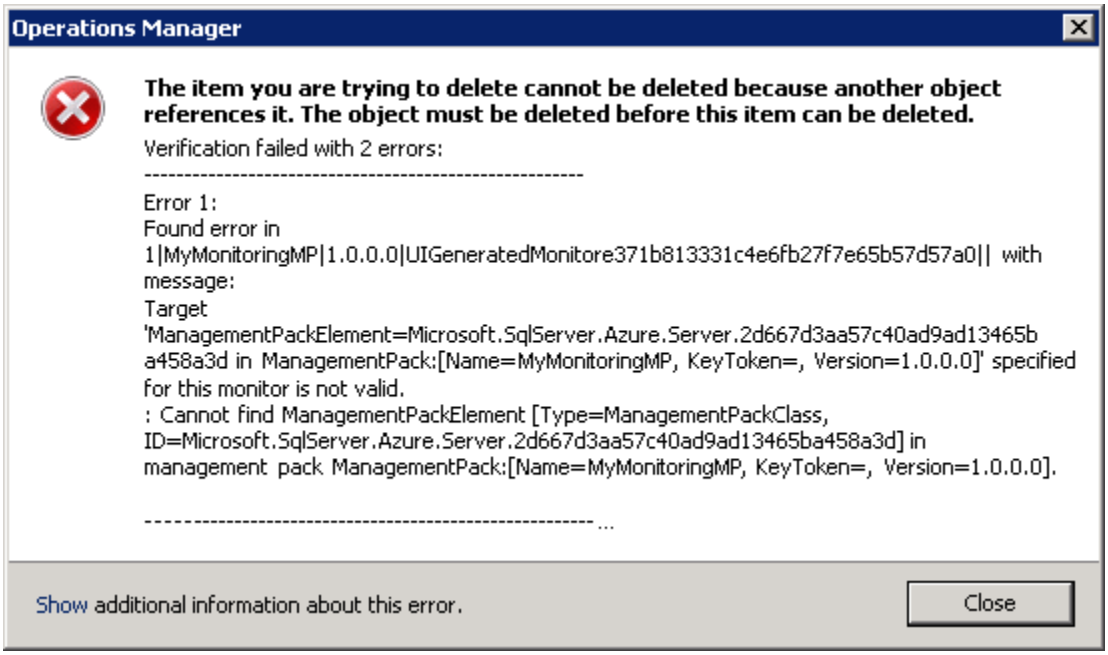
View Path	Description
Servers\Server State	Displays a list of monitored cloud services and their current states. Double-click the health state icon for a service to launch Health Explorer window for that service to locate the monitors, which are affecting the health state, and investigate any issues. The **Detail View** pane displays the properties of the server selected above.
Servers\Servers Diagram	Displays structured picture of all monitored cloud services with hosted databases. Expand required cloud service node to drill down to hosted objects.

Appendix: Known Issues and Troubleshooting

"The item you are trying to delete cannot be deleted because another object references it" error appears when trying to remove the template

Problem: When you are trying to remove a monitoring template, the following message is displayed:

"The item you are trying to delete cannot be deleted because another object references it…"



This is a known SCOM issue. Since SCOM does not support cascade delete for templates, you must manually remove all monitors targeting the server defined by the template, before you will be able to remove the template itself.
Resolution: In SCOM Console, navigate to **Authoring | Management Pack Objects | Monitors**, scope the list to the server, defined by the template you want to delete and remove all custom monitors.

Some Elastic Pools may not be discovered

Problem: Elastic Pools that do not contain any databases are not discovered.
Resolution: No resolution.

Error messages are received when Azure SQL Server is discovered by means of several templates simultaneously

Problem: If several Microsoft Azure SQL Database templates with different user rights are used simultaneously to discover same Azure SQL Servers, error events (ID 6302) appear in the Operations Manager Event Viewer.
Resolution: Make sure that each Azure SQL Server is discovered by means of a single template only.

Rules and monitors may provide incorrect data if default interval override values are changed

Problem: If the value of Interval (seconds) overridable parameter is set lower than the default value, rules and monitors may provide incorrect data.

Resolution: Make sure that Interval (seconds) overridable parameter is set no lower than the default value.

T-SQL monitoring does not work if REST connection is unavailable

Problem: T-SQL monitoring does not work if REST connection is unavailable, only space-monitoring rules are working correctly.
Resolution: No resolution.

Server exclude list option may work incorrectly

Problem: Server exclude list may behave incorrectly: the set masks may disappear from the list, and some performance may be received from the servers that should have been excluded.
Resolution: No resolution.

Some performance collection rules fail to collect data when REST+T-SQL is enabled

Problem: The following rules fail to collect performance data when REST+T-SQL is enabled:

- Azure SQL DB: DB Sessions Count
- Azure SQL DB: DB Sessions Average Memory Consumption (MB)
- Azure SQL DB: DB Sessions Rows Returned
- Azure SQL DB: DB Sessions Total CPU Time (ms)
- Azure SQL DB: DB Sessions Total Memory Consumption (MB)
- Azure SQL DB: DB Sessions Total Read/Write Operations
- Azure SQL DB: DB Transactions Locks Count
- Azure SQL DB: DB Transactions Max Log Usage (MB)
- Azure SQL DB: DB Transactions Max Running Time (minutes)

At that, the event log stays clear of the corresponding errors or warnings.

Resolution: Perform the following requests on the SQL Server:
CREATE USER [ApplicationName] FROM EXTERNAL PROVIDER;
GRANT VIEW DATABASE STATE TO [ApplicationName] - at User database
exec sp_addrolemember 'dbmanager', 'ApplicationName' - at Master database

"Use T-SQL for monitoring" checkbox configuration cannot be saved

Problem: After creating Azure SQL Database Monitoring template using "Azure Service Principal" Authentication Mode and "Use Existing Run As Profile" SPN Configuration, "Use T-SQL for monitoring" checkbox remains enabled regardless of the user choice.
Resolution: No resolution.

The monitored objects become unavailable if management server is changed in the resource pool

Problem: The monitored objects become unavailable (turn grey) in the Operations Manager if management server is changed in the resource pool. An alert with the following description is displayed in the SCOM log: “The pool member no longer owns any managed objects assigned to the pool because half or fewer members of the pool have acknowledged the most recent lease request. The pool member has unloaded the workflows for managed objects it previously owned.”
Resolution: Wait until the objects are processed on the new management server.

Azure Portal may stop retrieving results in responses to Azure REST API requests from some performance rules

Problem: In case of a great number of databases (about 1000 databases), Azure Portal may stop retrieving results in responses to Azure REST API requests from some performance rules. The errors in such responses are as follows:

HTTP/1.1 504 Gateway Timeout
.....
Connection: close
Content-Length: 141
{"error":{"code":"GatewayTimeout","message":"The gateway did not receive a response from 'Microsoft.Sql' within the specified time period."}}

Resolution: No resolution.

SQL connection to the Azure SQL Databases may fail if the number of databases is great

Problem: If the number of databases is great (over 2000 databases), SQL connection to the Azure SQL Databases may fail with the following exceptions:

- *A connection was successfully established with the server, but then an error occurred during the pre-login handshake.*
- *Connection Timeout Expired. The timeout period elapsed while attempting to consume the pre-login handshake acknowledgment. This could be because the pre-login handshake failed or the server was unable to respond back in time.*
- *A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name is correct and the SQL Server is configured to allow remote connections*.

As a result, Database Connection Availability monitor changes its state from “Healthy” to “Warning”. It may also affect workflows with T-SQL query datasources due to connection loss.

Resolution: No resolution.

"Azure SQL DB: DB Failed Connections Count" rule shows different data for REST and T-SQL monitoring types

Problem: Data provided by "Azure SQL DB: DB Failed Connections Count" rule differs for REST and T-SQL monitoring types: the data provided for T-SQL lacks "Azure SQL DB: DB Blocked by Firewall Count" information, while it is provided for REST.

Resolution: No resolution.

Appendix: Disabled Monitors

Most of the database performance monitors are disabled by default because the appropriate thresholds need to be determined based on the database applications being monitored. If this functionality is required for proper monitoring of the database applications, then perform the following:

1. Determine the correct threshold values based on the expected usage patterns or observed resource consumption.
2. Override one or more of these monitors to adjust the thresholds and enable them.

Disabled monitors are as follows:

- Monitors Count of connections blocked by the Firewall
- Monitors Count of Failed Connection
- Sessions
  - Sessions Count
  - Sessions Average Memory
  - Sessions Rows Returned
  - Sessions Total CPU Time
  - Sessions Total I/O
  - Sessions Total Memory
- Transactions
  - Transaction Locks Count
  - Transaction Log Space Used
  - Transaction Execution Time

Details about these monitors can be found in Appendix: Management Pack Objects and Workflows below.

Appendix: Management Pack Objects and Workflows

[Deprecated] Microsoft Azure SQL Database Federation

[Deprecated] SQL Database Federation hosted in Microsoft Azure.

[Deprecated] Microsoft Azure SQL Database Federation - Discoveries

Microsoft Azure SQL Database Federations Discovery

This workflow discovers federations hosted in Microsoft Azure SQL Database Cloud Server.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	14400
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

[Deprecated] Microsoft Azure SQL Database Federation - Dependency (rollup) monitors

Members Health

Rolls up all federation members availability monitors to the server.

Members Performance

Rolls up all federation members performance monitors to the server.

[Deprecated] Microsoft Azure SQL Database Federation Member

[Deprecated] SQL Database Federation Member hosted in Microsoft Azure.

[Deprecated] Microsoft Azure SQL Database Federation Member - Discoveries

Microsoft Azure SQL Database Federations Discovery

This workflow discovers federations hosted in Microsoft Azure SQL Database Cloud Server.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	14400
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Azure SQL Cloud Services

A group containing Azure SQL Cloud Services

Azure SQL Cloud Services - Discoveries

Azure SQL Cloud Services Group Discovery

This workflow populates Azure SQL Database Cloud Service for Azure SQL Cloud Services Group.

Azure SQL Database Cloud Services

A group containing Azure SQL Database Cloud Services

Azure SQL Database Cloud Services - Discoveries

Azure SQL Database Cloud Services Group Discovery

This workflow populates Azure SQL Database for Azure SQL Database Cloud Services Group.

Microsoft Azure SQL Database

SQL Database hosted in Microsoft Azure.

Microsoft Azure SQL Database - Discoveries

Microsoft Azure SQL User Databases Discovery

This workflow discovers user databases hosted in Microsoft Azure SQL Database Cloud Service.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Interval (seconds)	The recurring interval of time in	14400

	seconds in which to run the workflow.	
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Database - Rules (non-alerting)

[Deprecated] Azure SQL DB: DB Internal Network Egress (KB)

This rule collects internal network egress for Microsoft Azure SQL Database in kilobytes. This rule has been deprecated in Azure SQL Database V12 logical server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	No

Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

[Deprecated] Azure SQL DB: DB Internal Network Ingress (KB)

This rule collects internal network ingress for Microsoft Azure SQL Database in kilobytes. This rule has been deprecated in Azure SQL Database V12 logical server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

[Deprecated] Azure SQL DB: DB External Network Egress (KB)

This rule collects external network egress for Microsoft Azure SQL Database in kilobytes. This rule has been deprecated in Azure SQL Database V12 logical server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

[Deprecated] Azure SQL DB: DB External Network Ingress (KB)

This rule collects external network ingress for Microsoft Azure SQL Database in kilobytes. This rule has been deprecated in Azure SQL Database V12 logical server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Microsoft Azure SQL Database Cloud Service

A cloud service hosting SQL Databases.

Microsoft Azure SQL Database Cloud Service - Discoveries

Microsoft Azure SQL Database Cloud Service Advanced Properties Discovery

This workflow discovers advanced properties of Microsoft Azure SQL Database Cloud Service.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	14400

Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Database Cloud Service - Unit monitors

Server Connection Availability

This monitor checks the availability of connection to the server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Percent of Allocated DTUs

Monitors the number of database transaction units (DTUs) allocated by the server in relation to the limit per server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	90
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronizati	

	on time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	85

Maximum Number of Databases

Monitors the number of extant databases in relation to the limit per server.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to	135

	Critical if the value drops below this threshold.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops	120

	below this threshold.	

Server Health State

This monitor checks the health state of the “master” database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed	600

	and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Database Cloud Service - Dependency (rollup) monitors

Elastic Pools Performance

Rolls up all elastic pools performance monitors to the server.

Federations Health

Rolls up all federations availability monitors to the server.

Federations Performance

Rolls up all federations' performance monitors to the server.

Databases Health

Rolls up all user databases availability monitors to the server.

Databases Performance

Rolls up all user databases performance monitors to the server.

Elastic Pools Health

Rolls up all elastic pools availability monitors to the server.

Microsoft Azure SQL Database Cloud Service - Rules (non-alerting)

Azure SQL DB: Server DTU Used Count

This rule collects the number of DTUs allocated by Microsoft Azure SQL Database Cloud Service. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of	900

	time in seconds in which to run the workflow.	
Maximum Sample Separation		4
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Optimization Tolerance		1
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Server DTU Percentage

This rule collects DTUs allocated by Microsoft Azure SQL Database Cloud Service in percentage terms. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Maximum Sample Separation		4
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Optimization Tolerance		1
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Server Databases Count

This rule collects the number of Microsoft Azure SQL Database hosted in Microsoft Azure SQL Database Cloud Service.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/Monitoring Mode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Server DTU Limit Count

This rule collects the number of DTUs Microsoft Azure SQL Database Cloud Service can allocate before reaching limit.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Maximum Sample Separation		4
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Optimization Tolerance		1

Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Database Cloud Service - Console Tasks

Launch Microsoft Azure SQL Database Management Portal

Browses to Microsoft Azure SQL Database Management Portal for performing server and database administration tasks.

Microsoft Azure SQL Database Cloud Services

A group containing Microsoft Azure SQL Database Cloud Services.

Microsoft Azure SQL Database Cloud Services - Discoveries

Microsoft Azure SQL Database Cloud Services Group Discovery

This workflow populates the Microsoft Azure SQL Database Cloud Services group with SQL Database Cloud Services.

Microsoft Azure SQL Database Components Group

A group containing all components related to Microsoft Azure SQL Databases.

Microsoft Azure SQL Database Components Group - Discoveries

Microsoft Azure SQL Database Components Group Discovery

This workflow populates the Microsoft Azure SQL Database Components Group with related entities.

Microsoft Azure SQL Database Event Log Collection Target

This object is used to collect module errors from event logs of management servers that have Microsoft Azure SQL Database components.

Microsoft Azure SQL Database Event Log Collection Target - Discoveries

Microsoft Azure SQL Database Event Log Collection Target Management Service Discovery

This discovery rule discovers an event log collection target for a Microsoft Azure SQL Database. This object is used to collect module errors from event logs of management server computers.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Discover	This parameter is used to decide whether the Event Log Collection Target should be added to or removed from the Management Service. By default, inclusion into the Microsoft Azure SQL Monitoring Management Service Pool Group is the criteria.	true
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	14400
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Microsoft Azure SQL Database Event Log Collection Target - Rules (alerting)

Microsoft Azure SQL Database .Net Framework Rule

This rule provides Microsoft Azure SQL Database Management Pack workflows .Net Framework version check.

Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	Yes
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Priority	Defines Alert Priority.	2
Severity	Defines Alert Severity.	2

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Microsoft Azure SQL Database Management Pack Self-Monitoring

This rule provides Microsoft Azure SQL Database Management Pack workflows self-monitoring for critical issues.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	Yes
Priority	Defines Alert Priority.	2
Severity	Defines Alert Severity.	2

Microsoft Azure SQL Database Management Pack Self-Monitoring (Non-Critical)

This rule provides Microsoft Azure SQL Database Management Pack workflows self-monitoring for non-critical issues.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	Yes
Priority	Defines Alert Priority.	1
Severity	Defines Alert Severity.	1

Microsoft Azure SQL Database in Elastic Database Pool

SQL Database hosted in Microsoft Azure Elastic Database Pool.

Microsoft Azure SQL Database in Elastic Database Pool - Discoveries

Microsoft Azure SQL User Databases Discovery

This workflow discovers user databases hosted in Microsoft Azure SQL Database Cloud Service.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Interval (seconds)	The recurring interval of time in seconds in	14400

	which to run the workflow.	
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Database Replication

SQL Database geo-replicated across different servers in Microsoft Azure.

Microsoft Azure SQL Database Replication - Discoveries

Microsoft Azure SQL Database Replications Discovery

This workflow discovers Geo-Replications of databases hosted in Microsoft Azure SQL Database Cloud Service.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	14400
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	13800
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Database Replication - Dependency (rollup) monitors

Databases Health

Rolls up all user databases in geo-replication availability monitors to the replication database.

Databases Performance
Rolls up all user databases in geo-replication performance monitors to the replication database.

Microsoft Azure SQL Elastic Database Pool
SQL Elastic Database Pool hosted in Microsoft Azure.

Microsoft Azure SQL Elastic Database Pool - Discoveries
Microsoft Azure SQL Elastic Pool Discovery
Discovers Elastic Database Pools for the server.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	7200
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL Elastic Database Pool - Unit monitors
Maximum Number of Databases
Monitors the number of extant databases in relation to the limit per pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to	400

	Critical if the value drops below this threshold.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	200

Data IO Percentage

Monitors the Data IO Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	95
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the	60

	request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	90

Log IO Percentage

Monitors the Log Write Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	85
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

CPU Utilization (%)

Monitors the total CPU Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	80
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

Sessions Percentage

Monitors the Sessions Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	90
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	80

Workers Percentage

Monitors the Storage Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	85

Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value	75

	drops below this threshold.	

Storage Percentage

Monitors the Storage Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	90
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by	

	using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	80

eDTU Percentage

Monitors the eDTU Utilization consumed by all databases in Elastic Pool.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change	85

	the state to Critical if the value drops below this threshold.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

Microsoft Azure SQL Elastic Database Pool - Dependency (rollup) monitors

Databases Health

Rolls up all elastic pool databases availability monitors to the elastic pool.

Databases Performance

Rolls up all elastic pool databases performance monitors to the elastic pool.

Microsoft Azure SQL Elastic Database Pool - Rules (non-alerting)

Azure SQL DB: Elastic Pool eDTU Used

This rule collects the eDTU resources of Microsoft Azure SQL Elastic Database Pool in unit terms. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the	60

	request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool Log IO Percentage

This rule collects the log write utilization of Microsoft Azure SQL Elastic Database Pool in percentage terms.

Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in	900

	seconds in which to run the workflow.	
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool CPU Percentage

This rule collects the CPU resources of Microsoft Azure SQL Elastic Database Pool in percentage terms. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value

Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish	30

	connection to the database.	

Azure SQL DB: Elastic Pool Databases Count

This rule collects the number of Microsoft Azure SQL Databases.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is	600

	allowed to run before being closed and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool Sessions Percentage

This rule collects the sessions' count of Microsoft Azure SQL Elastic Database Pool in percentage terms per limit.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool eDTU Percentage

This rule collects the eDTU resources of Microsoft Azure SQL Elastic Database Pool in percentage terms. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool Storage Percentage

This rule collects the storage utilization of Microsoft Azure SQL Elastic Database Pool in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool Data IO Percentage

This rule collects the data IO utilization of Microsoft Azure SQL Elastic Database Pool in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed	600

	and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Elastic Pool Workers Percentage

This rule collects the workers utilization of Microsoft Azure SQL Elastic Database Pool in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time	

	specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL User Database

SQL Azure User Database hosted on SQL Azure Server.

Microsoft Azure SQL User Database - Discoveries

Microsoft Azure SQL User Databases Discovery

This workflow discovers user databases hosted in Microsoft Azure SQL Database Cloud Service.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	14400
Monitoring Mode	Defines monitoring mode.	$Target/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before	60

	the request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL User Database - Unit monitors

Workers Percentage

Monitors the total amount of maximum concurrent workers (requests) consumed by all database sessions.

Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the	95

	value drops below this threshold.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change	75

	the state to Warning if the value drops below this threshold.	

Monitors Count of Failed Connection

Monitors the count of failed connections.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	20
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	1800
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	5

CPU Percentage

Monitors the CPU resources consumed by all database sessions.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow	True

	generates an Alert.	
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	95
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must	30

	establish connection to the database.	
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

Sessions Average Memory

Monitors the average amount of memory consumption for all sessions of a database.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	4500
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	3000

Sessions Total CPU Time

Monitors the total amount of CPU time consumed by all database sessions.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow	True

	generates an Alert.	
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	32400000
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change	28800000

	the state to Warning if the value drops below this threshold.	

Sessions Rows Returned

Monitors the rows returned for all sessions of a database.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	120000
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format.	

	May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	100000

Log IO Percentage

Monitors the write resource utilization in percentage terms by all database sessions.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the	95

	value drops below this threshold.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change	75

	the state to Warning if the value drops below this threshold.	

Geo-Replication Link State

Monitors Synchronization State of Geo-Replication for secondary databases.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Sessions Percentage

Monitors the percentage of maximum concurrent sessions of the database's service tier limit. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	95
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

In-memory OLTP Storage Percentage

Monitors the total amount of XTP Storage (In-memory OLTP Storage) in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	95
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

Transaction Locks Count

Monitors the highest number of locks held by any transaction for a database.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops	120000

	below this threshold.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	100000

Database Health State

This monitor checks the health state of the Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

DTU Percentage

Monitors the DTU Utilization consumed by the database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	85
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the	60

	request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

Data IO Percentage

Monitors the data I/O utilization in percentage terms by all database sessions.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	95
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	75

Sessions Total I/O

Monitors the total amount of disk reads and writes for all database sessions.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	1200000
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	1000000

Transaction Execution Time

Monitors the longest elapsed (wall clock) time of all transactions for a database.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No

Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	15
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection	30

	to the database.	
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	10

Database Free Space

This monitor checks the free space of the Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	10
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait	60

	before the request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	20

Monitors Count of connections blocked by the Firewall

Monitors the count of connections blocked by the Firewall.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No

Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	100
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	1800
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	10

Sessions Total Memory

Monitors the total amount of memory consumed by all database sessions.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	4500
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	3000

Sessions Count

Monitors the number of database sessions.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No

Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	250
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection	30

	to the database.	
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	200

Transaction Log Space Used

Monitors the largest amount of log space consumed by any transaction for a database.
Note that this monitor works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	No
Generate Alerts	Defines whether the workflow generates an Alert.	True
Critical Threshold	The monitor will change the state to Critical if the value drops below this threshold.	1920
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronizati	

	on time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30
Warning Threshold	The monitor will change the state to Warning if the value drops below this threshold.	1536

Database Connection Availability

This monitor checks the connection availability to the Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	True
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Microsoft Azure SQL User Database - Rules (non-alerting)

Azure SQL DB: DB DTU Percentage

This rule collects the DTU resources of Microsoft Azure SQL Database in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time	

	specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Deadlocks Count

This rule collects the count of deadlocks in Microsoft Azure SQL Database.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	1800

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Used Space Percentage

This rule collects the amount of space used by Microsoft Azure SQL Database in percentage terms. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the	No

	workflow generates an Alert.	
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Transactions Max Running Time (minutes)

This rule collects max transactions running time for Microsoft Azure SQL Database in minutes.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection	30

	to the database.	

Azure SQL DB: DB Blocked by Firewall Count

This rule collects the count of connections blocked by the firewall in Microsoft Azure SQL Database. Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	1800
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is	600

	allowed to run before being closed and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Failed Connections Count

This rule collects the count of failed connections in Microsoft Azure SQL Database.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	1800
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Total Read/Write Operations

This rule collects total read/write operations performed by requests in all current Microsoft Azure SQL Database sessions.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run	900

	the workflow.	
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Transactions Max Log Usage (MB)

This rule collects max transactions log usage for Microsoft Azure SQL Database in megabytes.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No

Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Log IO Percentage

This rule collects the percentage of write resource utilization of the service tier limit by Microsoft Azure SQL Database.

Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB CPU Percentage

This rule collects the CPU resources of Microsoft Azure SQL Database in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed	600

	and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Total CPU Time (ms)

This rule collects total CPU time used by all current Microsoft Azure SQL Database sessions.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Count

This rule collects number of current Microsoft Azure SQL Database sessions.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time	

	specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Workers Percentage

This rule collects percentage of maximum concurrent workers (requests) of the database's service tier limit by the Microsoft Azure SQL Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Average Memory Consumption (MB)

This rule collects average memory amount used by a single Microsoft Azure SQL Database session in megabytes.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Percentage

This rule collects the percentage of maximum concurrent sessions of the database's service tier limit by Microsoft Azure SQL Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database	A period in which the workflow	30

connection (seconds)	must establish connection to the database.	

Azure SQL DB: DB Free Space (MB)

This rule collects the amount of space left in Microsoft Azure SQL Database in megabytes.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB DTU Used Count

This rule collects the number of DTUs allocated by Microsoft Azure SQL Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the	60

	request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Used Space (MB)

This rule collects the amount of space used by the Microsoft Azure SQL Database in megabytes. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in	900

	which to run the workflow.	
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Transactions Locks Count

This rule collects transactions locks count for Microsoft Azure SQL Database.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value

Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB In-memory OLTP Storage Percentage

This rule collects the usage of In-memory OLTP Storage by Microsoft Azure SQL Database in percentage terms.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600

Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Total Memory Consumption (MB)

This rule collects total memory consumed by all Microsoft Azure SQL Database sessions in megabytes. Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is	600

	allowed to run before being closed and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Data IO Percentage

This rule collects the percentage of average data I/O utilization of service tier limit by Microsoft Azure SQL Database.
Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60

Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Free Space Percentage

This rule collects the amount of space left in Microsoft Azure SQL Database in percentage terms. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900

Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Successful Connections Count

This rule collects the count of successful connections in Microsoft Azure SQL Database.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes

Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	1800
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: Total Space Quota (MB)

This rule collects the total available amount of space for Microsoft Azure SQL Database in megabytes. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the request times out.	60
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed	600

	and marked as failed.	
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB Sessions Rows Returned

This rule collects number of rows returned by all current Microsoft Azure SQL Database sessions.
Note that this rule works through T-SQL only.
In order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	

Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

Azure SQL DB: DB DTU Limit Count

This rule collects the number of DTUs Microsoft Azure SQL Database can allocate before reaching limit. Note that in order to prevent incorrect data collection, the value of Interval (seconds) overridable parameter should not be set lower than the default value.

Name	Description	Default value
Enabled	Enables or disables the workflow.	Yes
Generate Alerts	Defines whether the workflow generates an Alert.	No
Interval (seconds)	The recurring interval of time in seconds in which to run the workflow.	900
Monitoring Mode	Defines monitoring mode.	$Target/Host/Property[Type="Microsoft.SqlServer.Azure.Server"]/MonitoringMode$
Request timeout (seconds)	Gets or sets the timespan to wait before the	60

	request times out.	
Synchronization Time	The synchronization time specified by using a 24-hour format. May be omitted.	
Timeout (seconds)	Specifies the time the workflow is allowed to run before being closed and marked as failed.	600
Timeout for database connection (seconds)	A period in which the workflow must establish connection to the database.	30

SQL Server Alerts Scope Group

SQL Server Alerts Scope Group contains SQL Server objects which can throw alerts.

SQL Server Alerts Scope Group - Discoveries

Azure SQL Alert Group Discovery

This workflow populates Azure SQL Database components for SQL Server Alerts Group.