

Marcos Freccia

Data Platform MVP



10 alerts that you should have it
running in your SQL Server



Who Am I?

SQL Server DBA at Zalando SE

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Data Platform MVP

MCSA DBA & DBA SQL Server 2016 – Charter

MCSE Data Management and Analytics SQL Server 2016 – Charter

Working with SQL Server for over 8 years

Originally from Brazil, currently living in Berlin, Germany



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Agenda

- Why & History?
- How
- What?
- Some configuration steps
- Resources?







 Windows	 Azure	 Visual Studio	 Office	.NET
ASP.NET	SQL	Enterprise Mobility + Security	 nuget	Dynamics 365
 Xamarin	Azure Bot Service	System Center	Microsoft Education	 PowerShell





Where are the instructions?

<https://aka.ms/ms-docs>



- docs.microsoft.com is the platform hosting Microsoft technical documentation
- Content is Open Source(*), Hosted on GitHub, Community-enabled + in your own language!
- So YOU can help the community of users worldwide to get a better experience by improving the Docs, and grow your reputation online!!

Discover how here <https://aka.ms/intldocs>



Do you like Open Source?
<https://aka.ms/msoss1oc>



VS Code



SQL on Linux



Team Explorer Everywhere

... and more!

Help the Community to get them in your language today!

Why

- Not all companies can afford a monitoring tool.



Why

- We should be able to know what is happening in our environment.
- Data Platform MVP Fabricio Lima has in Portuguese
 - @Fabriciodba
 - <https://www.fabriciolima.net/blog/2017/10/05/video-criando-15-alertas-no-sql-server-em-apenas-5-minutos/>



How

- Plenty of Free Scripts!
- `sp_whoisactive` from Adam Machanic
- Database Mail
- SQL Server Agent Jobs
- Alerts



What

- Blocked Processes
- Transaction Log Full
- Disk Space
- CPU Utilization
- Tempdb Utilization
- Database Status
- Slow Queries
- SQL Server Restarted
- Databases without backup
- Severity Alerts
- Corrupted Databases
- Etc..



Some configuration steps

- We will need a dedicated database.

```
IF NOT EXISTS (SELECT * FROM sys.databases WHERE name = 'DBAUtils')
BEGIN
    CREATE DATABASE DBAUtils;

    ALTER DATABASE DBAUtils SET RECOVERY SIMPLE;
END;
ELSE
BEGIN
    ALTER DATABASE DBAUtils SET RECOVERY SIMPLE;
END;
```



Some configuration steps

- Setup Database Mail.

```
USE master;  
GO  
sp_configure 'show advanced options', 1;  
GO  
RECONFIGURE WITH OVERRIDE;  
GO  
sp_configure 'Database Mail XPs', 1;  
GO  
RECONFIGURE;  
GO
```



Some configuration steps

- Setup Database Mail.

```
IF NOT EXISTS
(
    SELECT *
    FROM msdb.dbo.sysmail_profile
    WHERE name = 'DBA Profile'
)
BEGIN
    EXECUTE msdb.dbo.sysmail_add_profile_sp @profile_name = 'DBA
Profile',
                                           @description = '';
END;
```



Some configuration steps

- Setup Database Mail.

```
IF NOT EXISTS
(
    SELECT *
    FROM msdb.dbo.sysmail_account
    WHERE name = 'DBA Support'
)
BEGIN
    --CREATE Account [DBA Support]
    EXECUTE msdb.dbo.sysmail_add_account_sp @account_name = 'DBA Support',
        @email_address = 'contato@learning365.com.br',
        @display_name = 'DBA',
        @replyto_address = '',
        @description = '',
        @mailserver_name = 'smtp.outlook.office365.com',
        @mailserver_type = 'SMTP',
        @port = '587',
        @username = 'contato@learning365.com.br',
        @password = 'NotTheRealPassword',
        @use_default_credentials = 0,
        @enable_ssl = 1;
END;
```



Some configuration steps

- Setup Database Mail.

```
IF NOT EXISTS
(
    SELECT *
    FROM msdb.dbo.sysmail_profileaccount pa
        INNER JOIN msdb.dbo.sysmail_profile p
            ON pa.profile_id = p.profile_id
        INNER JOIN msdb.dbo.sysmail_account a
            ON pa.account_id = a.account_id
    WHERE p.name = 'DBA Profile'
        AND a.name = 'DBA Support'
)
BEGIN
    EXECUTE msdb.dbo.sysmail_add_profileaccount_sp @profile_name = 'DBA Profile',
        @account_name = 'DBA Support',
        @sequence_number = 1;
END;
```



Some configuration steps

- Creating Operators and Associating them to SQL Server Agent.

```
USE [msdb];
```

```
GO
```

```
EXEC [msdb].[dbo].[sp_add_operator] @name = N'DBA',  
                                     @enabled = 1,  
                                     @pager_days = 0,  
                                     @email_address = N'sqlfreccia@outlook.com'; -- If you need more  
emails just use ";" and add the next one.
```

```
GO
```

```
-- We set this Database Mail Profile in the SQL Server Agent. Needs a Service Restart
```

```
USE [msdb];
```

```
GO
```

```
EXEC msdb.dbo.sp_set_sqlagent_properties @email_save_in_sent_folder = 1,  
                                         @databasemail_profile = N'DBA Profile';
```

```
GO
```



Some configuration steps

- Setup our base table that holds all configuration.

```
USE [DBAUtils];
GO
DECLARE @Email VARCHAR(MAX);
DECLARE @EmailProfile VARCHAR(MAX);

SELECT @Email = 'sqlfreccia@outlook.com';
SELECT @EmailProfile = 'DBA Profile';

IF (OBJECT_ID('[dbo].[Alerts]') IS NOT NULL)
    DROP TABLE [dbo].[Alerts];

CREATE TABLE [dbo].[Alerts]
(
    [Id] INT IDENTITY PRIMARY KEY,
    [Id_Alert_Parameter] INT NOT NULL,
    [Alert_Message] VARCHAR(2000),
    [type] TINYINT, -- 0: CLEAR / 1: ALERT
    [Alert_Date] DATETIME
        DEFAULT (GETDATE())
);
```



Some configuration steps

- Setup our base table that holds all configuration.

```
IF (OBJECT_ID('[dbo].[Alert_Parameters]') IS NOT NULL)
    DROP TABLE [dbo].[Alert_Parameters];
```

```
CREATE TABLE [dbo].[Alert_Parameters]
(
    [Id_Alert_Parameter] INT NOT NULL IDENTITY(1, 1) PRIMARY KEY,
    [Alert_Name] VARCHAR(100) NOT NULL,
    [Procedure_Name] VARCHAR(100) NOT NULL,
    [Clear] BIT NOT NULL,
    [Parameter_Value] INT NULL,
    [Metric_Description] VARCHAR(50) NULL,
    [Email_Profile] VARCHAR(200) NULL,
    [Email] VARCHAR(500) NULL
) ON [PRIMARY];
```

```
ALTER TABLE [dbo].[Alerts]
ADD CONSTRAINT FK01_Alerts
    FOREIGN KEY ([Id_Alert_Parameter])
    REFERENCES [dbo].[Alert_Parameters] ([Id_Alert_Parameter]);
```



Some configuration steps

- Setup our base table that holds all configuration.

```
IF (OBJECT_ID( '[dbo].[Suspect_Pages_Historic]' ) IS NOT NULL)  
    DROP TABLE [dbo].[Suspect_Pages_Historic];
```

```
CREATE TABLE [dbo].[Suspect_Pages_Historic]  
(  
    [database_id] [INT] NOT NULL,  
    [file_id] [INT] NOT NULL,  
    [page_id] [BIGINT] NOT NULL,  
    [event_type] [INT] NOT NULL,  
    [corruption_date] [DATETIME] NOT NULL  
) ON [PRIMARY];
```



Some configuration steps

- Other alerts really important to setup.

-- <https://support.microsoft.com/en-us/help/2015755/how-to-troubleshoot-a-msg-823-error-in-sql-server>

--Error Number 823

```
IF EXISTS
(
    SELECT *
    FROM [msdb].[dbo].[sysalerts]
    WHERE name = 'Error Number 823'
)
BEGIN
    EXEC [msdb].[dbo].[sp_delete_alert] @name = N'Error Number 823';
END;
EXEC [msdb].[dbo].[sp_add_alert] @name = N'Error Number 823',
    @message_id = 823,
    @severity = 0,
    @enabled = 1,
    @delay_between_responses = 60,
    @include_event_description_in = 1;

GO
EXEC [msdb].[dbo].[sp_add_notification] @alert_name = N'Error Number 823',
    @operator_name = N'DBA',
    @notification_method = 7;

GO
```



Some configuration steps

- Other alerts really important to setup.

-- <https://support.microsoft.com/en-us/help/2015756/how-to-troubleshoot-msg-824-in-sql-server>

--Error Number 824

```
IF EXISTS
(
    SELECT *
    FROM [msdb].[dbo].[sysalerts]
    WHERE name = 'Error Number 824'
)
BEGIN
    EXEC [msdb].[dbo].[sp_delete_alert] @name = N'Error Number 824';
END;
EXEC [msdb].[dbo].[sp_add_alert] @name = N'Error Number 824',
    @message_id = 824,
    @severity = 0,
    @enabled = 1,
    @delay_between_responses = 60,
    @include_event_description_in = 1;

GO
EXEC [msdb].[dbo].[sp_add_notification] @alert_name = N'Error Number 824',
    @operator_name = N'DBA',
    @notification_method = 7;
```

GO



Some configuration steps

- Other alerts really important to setup.

-- <https://www.sqlskills.com/blogs/paul/a-little-known-sign-of-impending-doom-error-825/>

--Error Number 825

```
IF EXISTS
(
    SELECT *
    FROM [msdb].[dbo].[sysalerts]
    WHERE name = 'Error Number 825'
)
BEGIN
    EXEC [msdb].[dbo].[sp_delete_alert] @name = N'Error Number 825';
END;
EXEC [msdb].[dbo].[sp_add_alert] @name = N'Error Number 825',
                                @message_id = 825,
                                @severity = 0,
                                @enabled = 1,
                                @delay_between_responses = 60,
                                @include_event_description_in = 1;

GO
EXEC [msdb].[dbo].[sp_add_notification] @alert_name = N'Error Number 825',
                                        @operator_name = N'DBA',
                                        @notification_method = 7;
```

GO



Some configuration steps

- Setup our base table that holds all configuration.

```
INSERT INTO dbo.Alert_Parameters
```

```
(
    Alert_Name,
    Procedure_Name,
    Clear,
    Parameter_Value,
    Metric_Description,
    Email_Profile,
    Email
)
VALUES
('Database Checklist Version', '1.0.0', 0, NULL, NULL, @EmailProfile, @Email),
('Alert Version', '1.0.0', 0, NULL, NULL, NULL, NULL),
('Blocked Process', 'usp_Blocked_Process_Alert', 1, 2, 'Minutes', @EmailProfile, @Email),
('Transaction Log Full', 'usp_transaction_log_Full', 1, 85, 'Percentage', @EmailProfile, @Email),
('Disk Space', 'usp_Disk_Space_Alert', 1, 80, 'Percentage', @EmailProfile, @Email),
('CPU Usage', 'usp_CPU_Usage', 1, 85, 'Percentage', @EmailProfile, @Email),
('Tempdb Utilization', 'usp_Tempdb_Utilization_Alert', 1, 70, 'Percentage', @EmailProfile, @Email),
('SQL Server Connection', 'usp_SQL_Server_Connection', 1, 2000, 'Quantity', @EmailProfile, @Email),
('Database Status', 'usp_Database_Errors_Alert', 1, NULL, NULL, @EmailProfile, @Email),
('Corrupted Page', 'usp_Database_Errors_Alert', 0, NULL, NULL, @EmailProfile, @Email),
('Slow Queries', 'usp_Slow_Queries', 0, 100, 'Quantity', @EmailProfile, @Email),
('Slow Queries Trace', 'usp_Create_Trace', 0, 3, 'Seconds', @EmailProfile, @Email),
('Job Failed', 'usp_Job_Failed_Alert', 0, 24, 'Hours', @EmailProfile, @Email),
('SQL Server Restarted', 'usp_SQL_Server_Restarted_Alert', 0, 20, 'Minutes', @EmailProfile, @Email),
('Created Database', 'usp_Created_Database_Alert', 0, 24, 'Hours', @EmailProfile, @Email),
('Databases without backup', 'usp_Databases_without_backup', 0, 24, 'Hours', @EmailProfile, @Email),
('Corrupted Database', 'usp_checkdb_alert', 0, NULL, NULL, @EmailProfile, @Email),
('Processes in execution', 'stp_SendEmail_Executing_Processes', 0, NULL, NULL, @EmailProfile, @Email);
```



Some configuration steps

- Setup our base table that holds all configuration.

```
INSERT INTO dbo.Alert_Parameters
```

```
(
    Alert_Name,
    Procedure_Name,
    Clear,
    Parameter_Value,
    Metric_Description,
    Email_Profile,
    Email
)
VALUES
('Database Checklist Version', '1.0.0', 0, NULL, NULL, @EmailProfile, @Email),
('Alert Version', '1.0.0', 0, NULL, NULL, NULL, NULL),
('Blocked Process', 'usp_Blocked_Process_Alert', 1, 2, 'Minutes', @EmailProfile, @Email),
('Transaction Log Full', 'usp_transaction_log_Full', 1, 85, 'Percentage', @EmailProfile, @Email),
('Disk Space', 'usp_Disk_Space_Alert', 1, 80, 'Percentage', @EmailProfile, @Email),
('CPU Usage', 'usp_CPU_Usage', 1, 85, 'Percentage', @EmailProfile, @Email),
('Tempdb Utilization', 'usp_Tempdb_Utilization_Alert', 1, 70, 'Percentage', @EmailProfile, @Email),
('SQL Server Connection', 'usp_SQL_Server_Connection', 1, 2000, 'Quantity', @EmailProfile, @Email),
('Database Status', 'usp_Database_Errors_Alert', 1, NULL, NULL, @EmailProfile, @Email),
('Corrupted Page', 'usp_Database_Errors_Alert', 0, NULL, NULL, @EmailProfile, @Email),
('Slow Queries', 'usp_Slow_Queries', 0, 100, 'Quantity', @EmailProfile, @Email),
('Slow Queries Trace', 'usp_Create_Trace', 0, 3, 'Seconds', @EmailProfile, @Email),
('Job Failed', 'usp_Job_Failed_Alert', 0, 24, 'Hours', @EmailProfile, @Email),
('SQL Server Restarted', 'usp_SQL_Server_Restarted_Alert', 0, 20, 'Minutes', @EmailProfile, @Email),
('Created Database', 'usp_Created_Database_Alert', 0, 24, 'Hours', @EmailProfile, @Email),
('Databases without backup', 'usp_Databases_without_backup', 0, 24, 'Hours', @EmailProfile, @Email),
('Corrupted Database', 'usp_checkdb_alert', 0, NULL, NULL, @EmailProfile, @Email),
('Processes in execution', 'stp_SendEmail_Executing_Processes', 0, NULL, NULL, @EmailProfile, @Email);
```



Some configuration steps

- The Alert_Parameters table is the most important.

	Id_Alert_Parameter	Alert_Name	Procedure_Name	Clear	Parameter_Value	Metric_Description	Email_Profile	Email
1	1	Database Checklist Version	1.0.0	0	NULL	NULL	DBA Profile	sqfreccia@outlook.com
2	2	Alert Version	1.0.0	0	NULL	NULL	NULL	NULL
3	3	Blocked Process	usp_Blocked_Process_Alert	1	2	Minutes	DBA Profile	sqfreccia@outlook.com
4	4	Transaction Log Full	usp_transaction_log_Full	1	85	Percentage	DBA Profile	sqfreccia@outlook.com
5	5	Disk Space	usp_Disk_Space_Alert	1	85	Percentage	DBA Profile	sqfreccia@outlook.com
6	6	CPU Usage	usp_CPU_Usage	1	85	Percentage	DBA Profile	sqfreccia@outlook.com
7	7	Tempdb Utilization	usp_Tempdb_Utilization_Alert	1	70	Percentage	DBA Profile	sqfreccia@outlook.com
8	8	SQL Server Connection	usp_SQL_Server_Connection	1	2000	Quantity	DBA Profile	sqfreccia@outlook.com
9	9	Database Status	usp_Database_Errors_Alert	1	NULL	NULL	DBA Profile	sqfreccia@outlook.com
10	10	Comupted Page	usp_Database_Errors_Alert	0	NULL	NULL	DBA Profile	sqfreccia@outlook.com
11	11	Slow Queries	usp_Slow_Queries	0	100	Quantity	DBA Profile	sqfreccia@outlook.com
12	12	Slow Queries Trace	usp_Create_Trace	0	3	Seconds	DBA Profile	sqfreccia@outlook.com
13	13	Job Failed	usp_Job_Failed_Alert	0	24	Hours	DBA Profile	sqfreccia@outlook.com
14	14	SQL Server Restarted	usp_SQL_Server_Restarted_Alert	0	20	Minutes	DBA Profile	sqfreccia@outlook.com
15	15	Created Database	usp_Created_Database_Alert	0	24	Hours	DBA Profile	sqfreccia@outlook.com
16	16	Databases without backup	usp_Databases_without_backup	0	24	Hours	DBA Profile	sqfreccia@outlook.com
17	17	Comupted Database	usp_checkdb_alert	0	NULL	NULL	DBA Profile	sqfreccia@outlook.com
18	18	Processes in execution	stp_SendEmail_Executing_Processes	0	NULL	NULL	DBA Profile	sqfreccia@outlook.com



Some configuration steps

- Don't forget to schedule the SQL Agent Jobs.

Job Name	What does it do?	Recommendation
DBA - Daily Alerts	<ul style="list-style-type: none">• Databases without Backup• Failed Jobs• New Databases	At least once in a day
DBA - Database Trace	<ul style="list-style-type: none">• Generate new Trace File for Slow Queries	Depends on the transaction workload of the environment. Maybe every 5 minutes



Some configuration steps

- Don't forget to schedule the SQL Agent Jobs.

Job Name	What does it do?	Recommendation
DBA – Database Alerts	<ul style="list-style-type: none">• Transaction Log Full• Database Errors: Corruption.	Every Minute, every day
DBA – Database Alerts	<ul style="list-style-type: none">• Blocked Processes• CPU Usage	Every minute, but only during business hours
	<ul style="list-style-type: none">• Disk Space• TempDB Utilization• Slow Queries	Every 5 minutes, every day



Some configuration steps

- Don't forget to schedule the SQL Agent Jobs.

Job Name	What does it do?	Recommendation
DBA – Database Alerts	<ul style="list-style-type: none">• SQL Server Restarted	Every 20 minutes, every day
DBA – Database Alerts	<ul style="list-style-type: none">• SQL Server Connections	Every 1 hour, every day



Demo Time!



What's Next!

- Make the deployment more friendly
- Improve the translation
- Smarter SQL Server Agent Jobs
- More strategic alerts: Availability Groups for instance.



Resources

- <http://whoisactive.com/>
- <https://github.com/FabricioLimaSolucoesEmBD/ScriptsCheckList>



Thank you!

Please give feedback!

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