

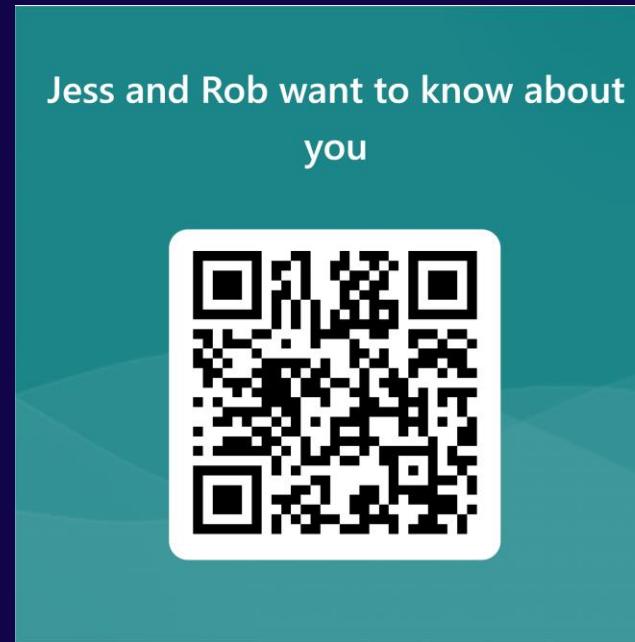
dbatools and dbachecks – Going Beyond the Book

Jess Pomfret

She/Her

Rob Sewell

He/Him



PASS24
Data Community Summit

Who are we?



Jess Pomfret

She/Her

I'm a data platform engineer with a passion for automation, proper football, and fitness. I enjoy contributing to open-source software and I'm a maintainer for dbatools.

DATA MASTERMINDS

- Data Platform Engineer

DUAL MICROSOFT MVP

- Azure
- Data Platform

jpomfret7@gmail.com



JESSPOMFRET.COM

MVP

Microsoft®
Most Valuable
Professional

Learn
dbatools
IN A MONTH OF LUNCHES
AUTOMATING SQL SERVER TASKS WITH POWERSHELL COMMANDS

WEEKEND	MONDAY	TUESDAY	WEDNESDAY
	1	2	3
	Installing dbatools	The dbatools lab	A gentle introduction to dbatools commands (Part 1)
	4	5	6
	Introducing dbatools	Creating your dbatools lab	Backup
	7	8	9
	Introducing your network	Inventorying your SQL estate	Registered Servers
	10	11	12
	Creating your first dbatools lab	Logins and users	Backup
	13	14	15
	Creating your first dbatools lab	Creating your first advanced dbatools lab	High availability and disaster recovery
	16	17	18
	Preparing for disaster	Performing your first advanced dbatools lab	Performance tuning, part 1
	19	20	21
	High availability and disaster recovery	Creating your first advanced dbatools lab	Performance tuning, part 2
	22	23	24
	Creating and managing your SQL Server login objects	Data masking	DayOps automation
	25	26	27
	DayOps automation	Tracing SQL Server activity	Security
	28	29	30
	Tracing SQL Server activity	Security	dbatools command-line interface
	31	32	33
	Never ending	Never ending	Never ending
	34	35	36
	Never ending	Never ending	Never ending

CHRISSEY LEMAIRE • ROB SEWELL
JESS POMFRET • CLÁUDIO SILVA
FOREWORD BY ANNA HOFFMAN

MANNING

Rob Sewell

He/Him

I was a SQL Server DBA with a passion for Powershell, Azure, Automation, and SQL (PaaS geddit?) (And a sense of humour (and a habit for writing inside braces)). Now I just help other people with those (not the braces bit).

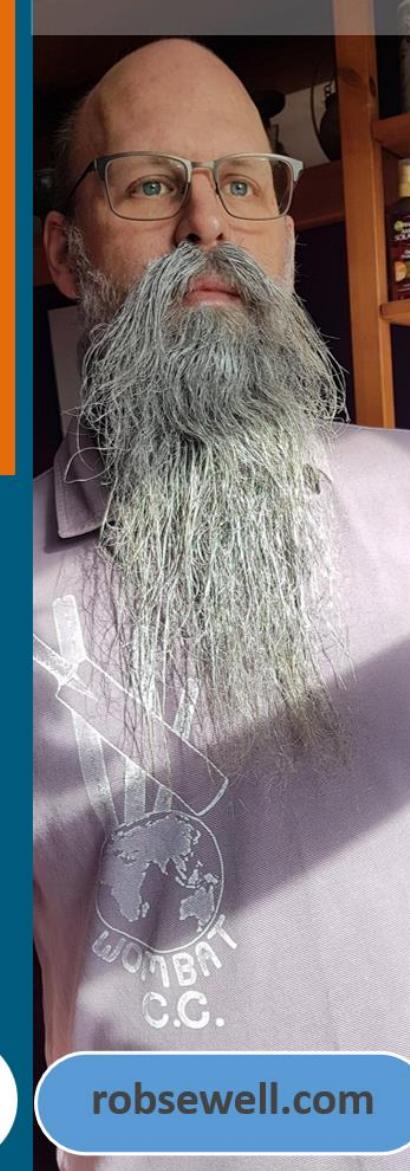
SEWELLS CONSULTING LTD

- Beard Twizzler

DUAL MICROSOFT MVP

- Data Platform
- Azure

mrrobsewell@outlook.com



robsewell.com



Learn
dbatools
IN A MONTH OF LUNCHES

AUTOMATING SQL SERVER TASKS WITH POWERSHELL COMMANDS



CHRISSEY LEMAIRE • ROB SEWELL
JESS POMFRET • CLÁUDIO SILVA
FOREWORD BY ANNA HOFFMAN

MANNING

Agenda

- 1: Intro
- 2: dbatools – recap and catch up
- 3: Replication
- 4: Upgrade Your PowerShell Skills
- 5: Performant dbatools code
- 6: Managing at scale
- 7: Fabric Magic
- 8: Audience decides
- 9: Q&A and Discussion

Agenda-ish!

- 1: Intro
- 2: dbatools – recap and catch up
- 3: Replication
- 4: Upgrade Your PowerShell Skills
- 5: Performant dbatools code
- 6: Managing at scale
- 7: **Fabric Magic** **dbatools.ai**
- 8: Audience decides
- 9: Q&A and Discussion

Timings Agenda-ish!

Great content 9:00 AM - 10:45 AM

Refreshment Break 10:45 AM - 11:00 AM

Really great content 11:00 AM - 12:30 PM

Lunch Break 12:30 PM - 1:30 PM

Unbelievably great content 1:30 PM - 2:45 PM

Refreshment Break 2:45 PM - 3:00 PM

Absolute gold level content 3:00 PM - 5:00 PM

Don't worry Jess - You will get Snacks and Food!

Be Kind



Take phone calls outside.
Don't talk over each other.

Don't wait until next week and think I wish I had asked that!

Others may have **different beliefs.**
Thats ok.

RESPECT

ASK

ACCEPT

NETWORK

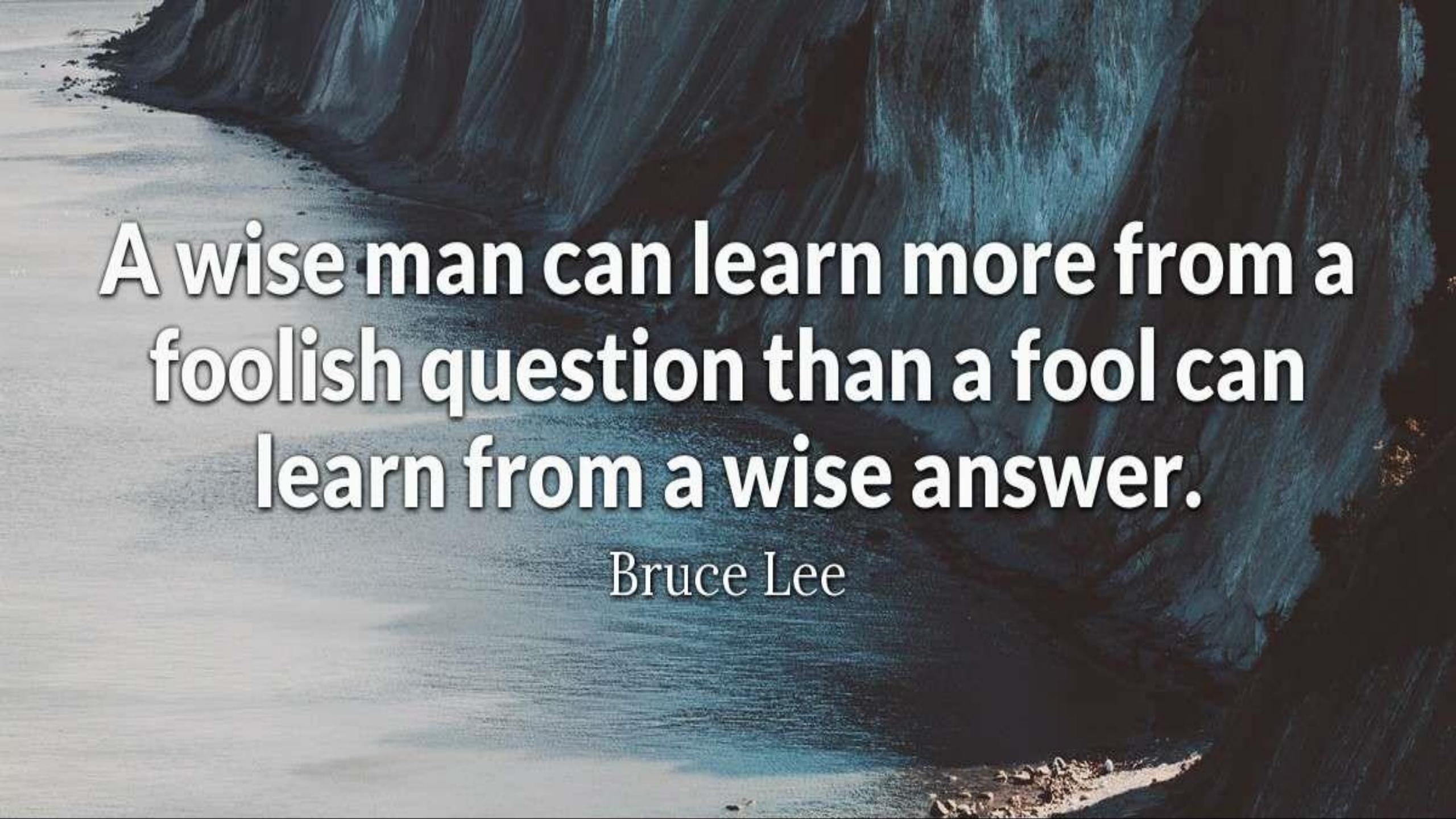
CONNECT

ENJOY

Don't miss out on the chance to **network**

with all the other **wonderful people** alongside you.

Today is not just about learning **but also about enjoyment**



A wise man can learn more from a foolish question than a fool can learn from a wise answer.

Bruce Lee



Question – Who are you?





What is dbatools?



It's like a command line SQL Server Management Studio

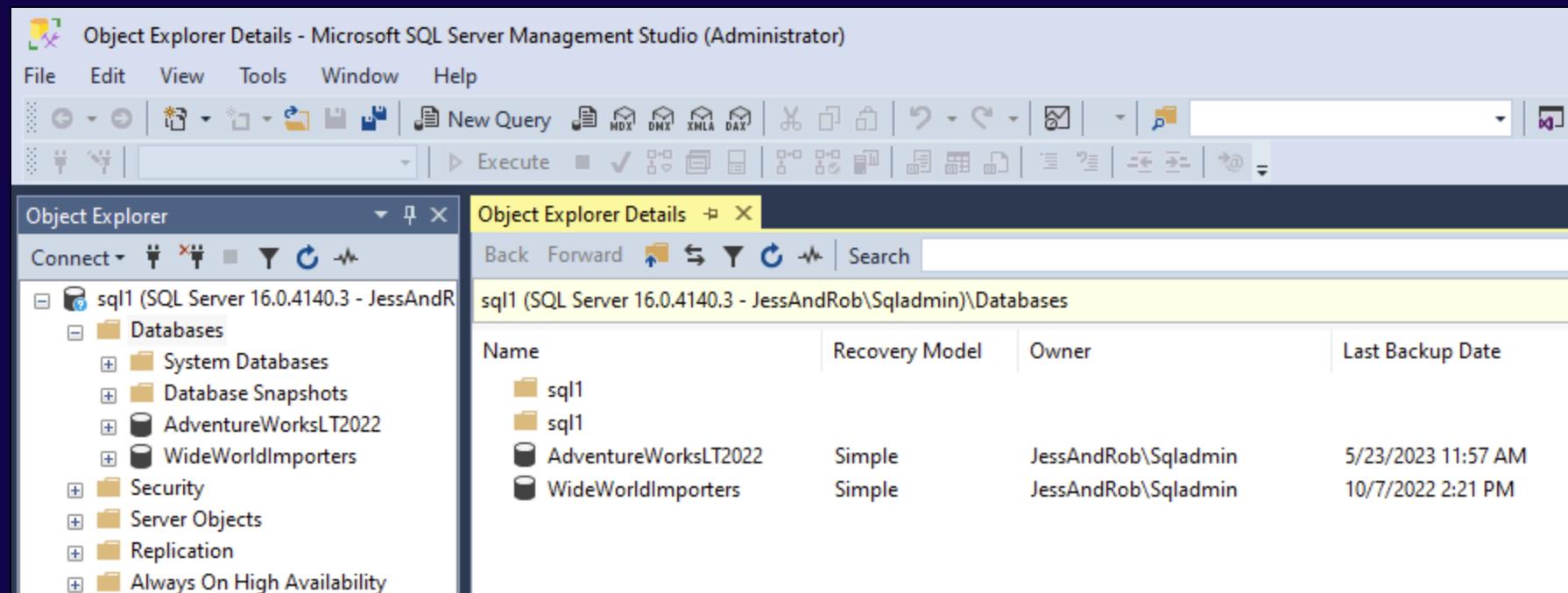
**If you can do it in SSMS – you can
do it in dbatools***

***mostly**

I mean, you've taken pretty all of
the crappy parts about writing
PowerShell for SQL and turned it
into something that makes it easy
to focus on the logic for
automation etc

- Digitalohm – SQL Server Slack (2010's)

Get Database Info for User Database on Sql1



The screenshot shows the SSMS interface with the title bar "Object Explorer Details - Microsoft SQL Server Management Studio (Administrator)". The left pane displays the Object Explorer with a tree view of the "sql1" database, including nodes for Databases, Security, Server Objects, Replication, and Always On High Availability. The right pane is titled "Object Explorer Details" and shows a table of databases:

Name	Recovery Model	Owner	Last Backup Date
sql1			
sql1			
AdventureWorksLT2022	Simple	JessAndRob\Sqladmin	5/23/2023 11:57 AM
WideWorldImporters	Simple	JessAndRob\Sqladmin	10/7/2022 2:21 PM

```
PS C:\GitHub\PASS-BTB> Get-DbaDatabase -SqlInstance sql1 -ExcludeSystem |  
● >> Select-Object Name, RecoveryModel, Owner, LastFullBackup
```

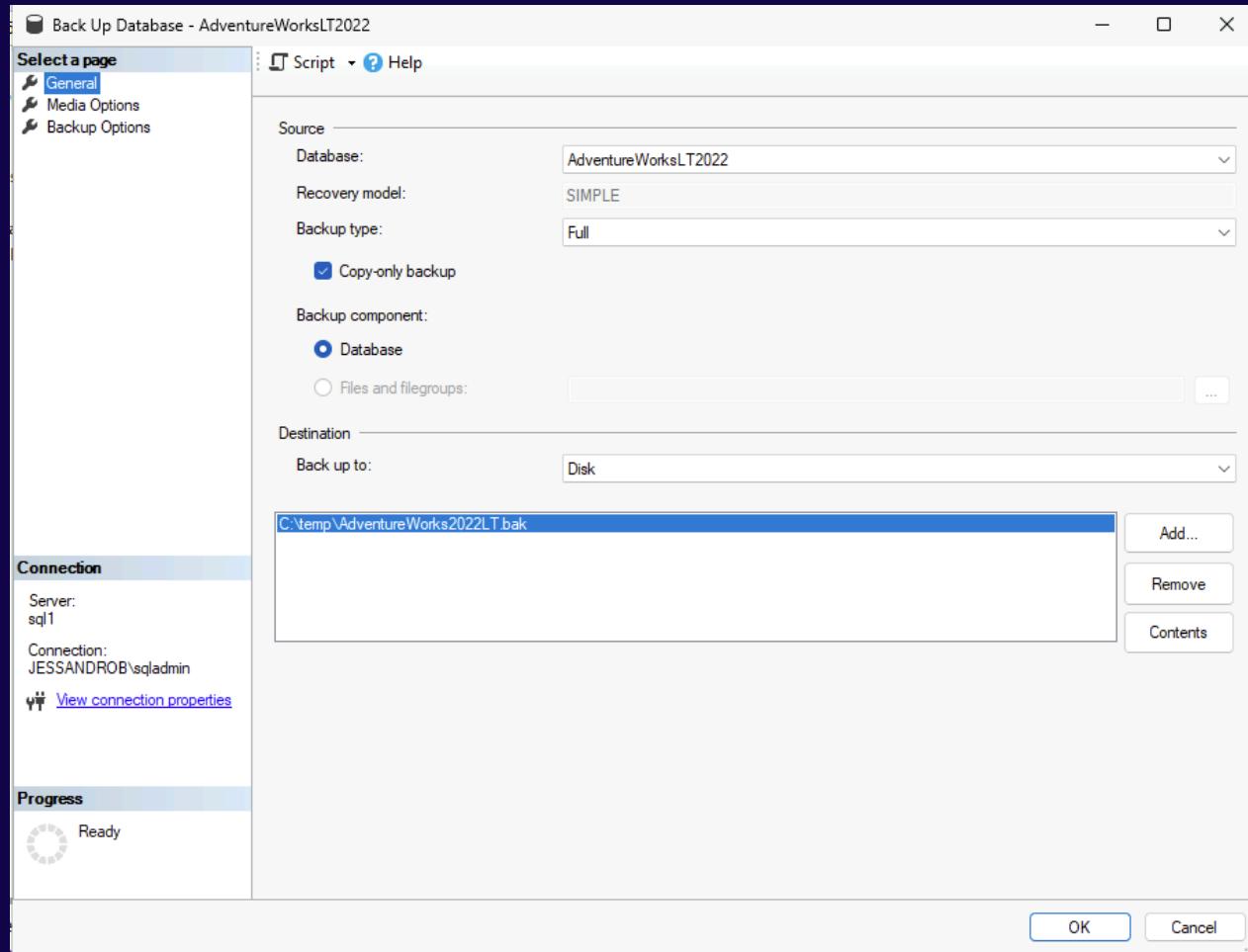
Get Database Info for User Database on Sql1

```
PS C:\GitHub\PASS-BTB> Get-DbaDatabase -SqlInstance sql1 -ExcludeSystem |  
● >> Select-Object Name, RecoveryModel, Owner, LastFullBackup
```

Name	RecoveryModel	Owner	LastFullBackup
AdventureWorksLT2022	Simple	JessAndRob\Sqladmin	5/23/2023 11:57:04 AM
WideWorldImporters	Simple	JessAndRob\Sqladmin	10/7/2022 2:21:58 PM

```
○ PS C:\GitHub\PASS-BTB> █
```

Backup a database on Sql1



```
1 $params = @{
2     SqlInstance = 'Sql1'
3     Database   = 'AdventureWorksLT2022'
4     CopyOnly    = $true
5     Path        = 'C:\temp\AdventureWorksLT2022.bak'
6 }
7 Backup-DbaDatabase @params
8
```

Get SQL Agent jobs on Sql1

Job Activity Monitor - sql1

Select a page

All Jobs

Agent Job Activity:

Name	Enabled	Status	Last Ru...	Last Run	Next Run	Category	Runnable
syspolicy_purg...	yes	Idle	Unkno...	never	9/22/2...	[Uncat...]	yes

Status

Last Refresh:
9/21/2024 11:55:45 AM

Next Refresh:
Manual
[View refresh settings](#)

Filter: None
[View filter settings](#)

Connection

Server: sql1

Connection: JESSANDROB\sqladmin
[View connection properties](#)

Progress

Done

[Close](#)

```
PS C:\GitHub\PASS-BTB> Get-DbaAgentJob -SqlInstance sql1
```

ComputerName	:	sql1
InstanceName	:	MSSQLSERVER
SqlInstance	:	sql1
Name	:	syspolicy_purge_history
Category	:	[Uncategorized (Local)]
OwnerLoginName	:	sa
CurrentRunStatus	:	Idle
CurrentRunRetryAttempt	:	0
Enabled	:	True
LastRunDate	:	1/1/0001 12:00:00 AM
LastRunOutcome	:	Unknown
HasSchedule	:	True
OperatorToEmail	:	
CreateDate	:	9/6/2024 9:14:41 PM

```
PS C:\GitHub\PASS-BTB>
```

Get Database Name and AutoShrink status on Sql1, Sql2 and Sql3

Object Explorer Details

Back Forward Search

sql1 (SQL Server 16.0.4140.3 - JessAndRob\Sqladmin)\Databases

Name	Auto Shrink Enabled
sql1	False
sql1	False
AdventureWorksLT2022	False
WideWorldImporters	False

Object Explorer Details

Back Forward Search

sql2 (SQL Server 16.0.4140.3 - JessAndRob\Sqladmin)\Databases

Name	Auto Shrink Enabled
sql2	False
sql2	False

Object Explorer Details	
Back Forward Search	
Name	Auto Shrink Enabled
sql3	False
sql3	False
0-22 (Taylor's version)	False
0-A Perfectly Good Heart	False
0-A Place in This World	False
0-All Too Well (10 minute versi...)	False
0-All Too Well (Taylor's version)	False
0-All You Had to Do Was Stay	False
0-Babe (Taylor's version)	False
0-Back To December	False
0-Bad Blood	False
0-Begin Again (Taylor's version)	False
0-Better Man (Taylor's version)	False
0-Better Than Revenge	False
0-Blank Space	False
0-Breathe	False
0-Call It What You Want	False
0-Change	True
0-Clean	False
0-Cold as You	False
0-Come Back... Be Here (Taylor'...)	False
0-Cornelia Street	False
0-Cruel Summer	False
0-Dancing With Our Hands Tied	False
0-Dear John	False
0-Death By A Thousand Cuts	False
0-Delicate	False
0-Dreams Are Made On	False

```
PS C:\GitHub\PASS-BTB>
>> Get-DbaDatabase -SqlInstance sql1, sql2, sql3 -ExcludeSystem |
>> Select SqlInstance, Name, AutoShrink
```

Get Database Name and AutoShrink status on Sql1, Sql2 and Sql3

```
○ PS C:\GitHub\PASS-BTB>
>> Get-DbaDatabase -SqlInstance sql1, sql2, sql3 -ExcludeSystem |
>> Select SqlInstance, Name, AutoShrink
```

SqlInstance	Name	AutoShrink
sql1	AdventureWorksLT2022	False
sql1	WideWorldImporters	False
sql3	0-Style	False
sql3	0-Blank Space	False
sql3	0-Shake It Off	False
sql3	0-All You Had to Do...	False
sql3	0-Out Of The Woods	False
sql3	1-Style	False
sql3	1-Blank Space	False
sql3	1-All You Had to Do...	False
sql3	1-Shake It Off	False
sql3	1-Out Of The Woods	False
sql3	2-Blank Space	False
sql3	2-Style	False
sql3	2-All You Had to Do...	False
12	2-Shake It Off	False



PowerShell



SQL Server

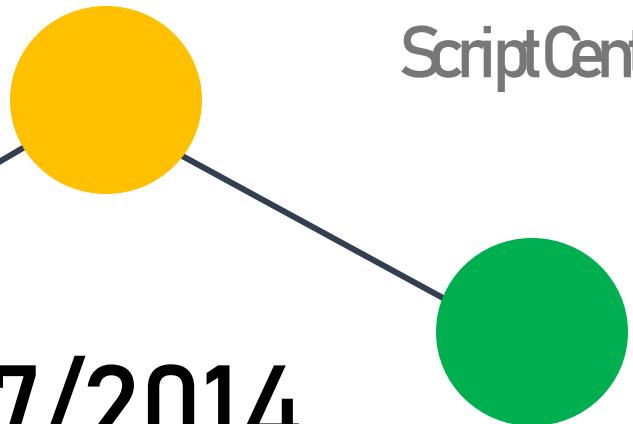
Instance migrations and best practice implementations have never been safer, faster or freer.

[DOWNLOAD](#)[GET STARTED](#)

dbatools.io



07/2014
Need to Migrate
Sharepoint
databases



07/2014
Published to
GitHub &
ScriptCenter

Script resources for IT professionals

Download resources and applications for Windows 10, Windows 8, Windows 7, Windows Server 2012 R2, Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, SharePoint, System Center, Office and other products. Find resources written in VB Script, PowerShell, SQL, JavaScript or other script languages. New resources are added frequently so check often and see what's new.,

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chrissy lemaire 🔍

22 results in chrissy lemaire [\[Clear\]](#) Sort by: Relevance ▼ RSS

[Migrate SQL Server Logins Between Instances](#)
[Chrissy LeMaire](#)
Uses PowerShell and SMO to migrate SQL logins. Logins are completely migrated and maintain their: SIDs, passwords, server/database roles, server/database permission sets & securables, default database and login attributes. Works on SQL Server 2000 and above.
[SQL Server, Powershell, Migration](#)

★★★★★ (13)
Updated 4/18/2016
Released 9/7/2014
5,608 Downloads
[PowerShell](#)

[Microsoft Script Center](#)



07/2014
Need to Migrate
Sharepoint
databases

07/2014
Published to
GitHub &
ScriptCenter

06/2016
First Community
Contributions

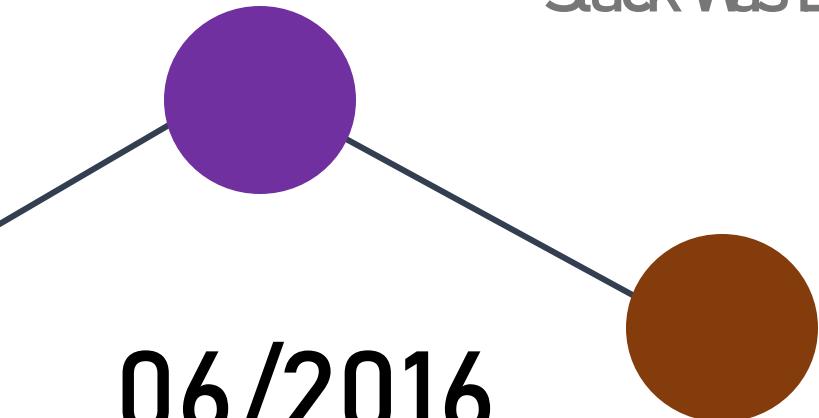
AM Boo! 🐱Bat🌈
@AMtwo

@cl Expand-SqlITLogResponsibly? I am so intrigued....

8:43 PM · Jun 21, 2016 · Twitter Web Client

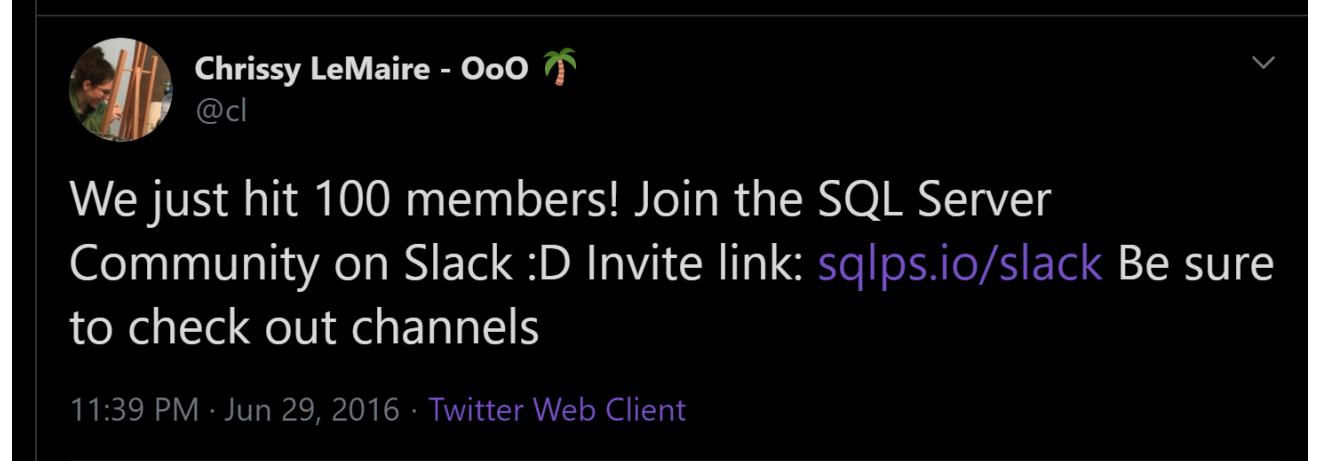
1 Retweet 2 Likes

Chrissy LeMaire - OoO 🌴 @cl · Jun 21, 2016
Replying to @AMtwo
About to update the docs! It's a new function from @ClaudioESSilva <3 It's the second of many DBA best practice commands



06/2016
First Community
Contributions

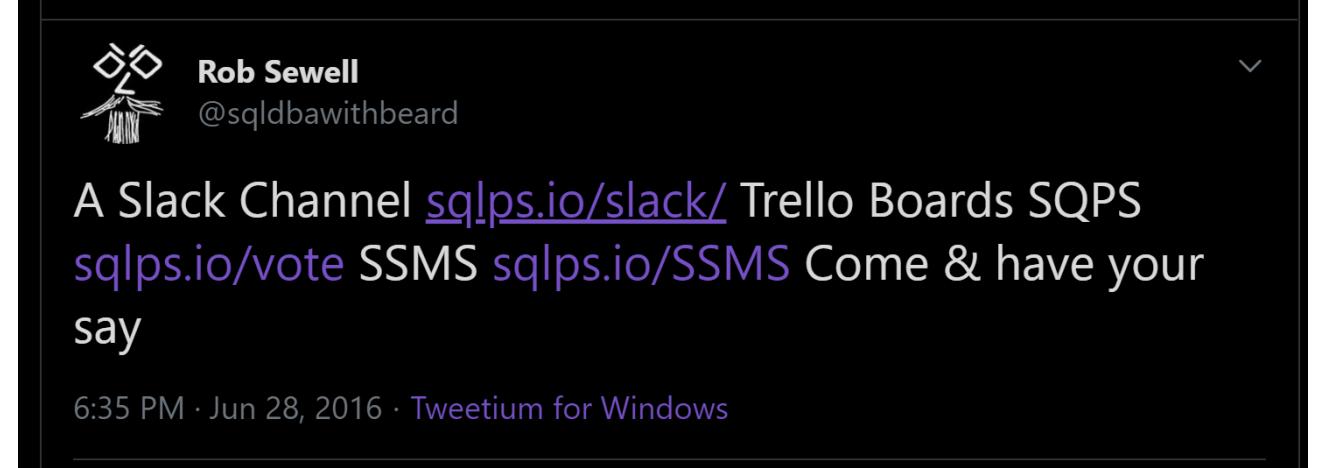
06/2016
SQL Community
Slack Was Born



Chrissy LeMaire - OoO 🌴
@cl

We just hit 100 members! Join the SQL Server Community on Slack :D Invite link: sqlps.io/slack Be sure to check out channels

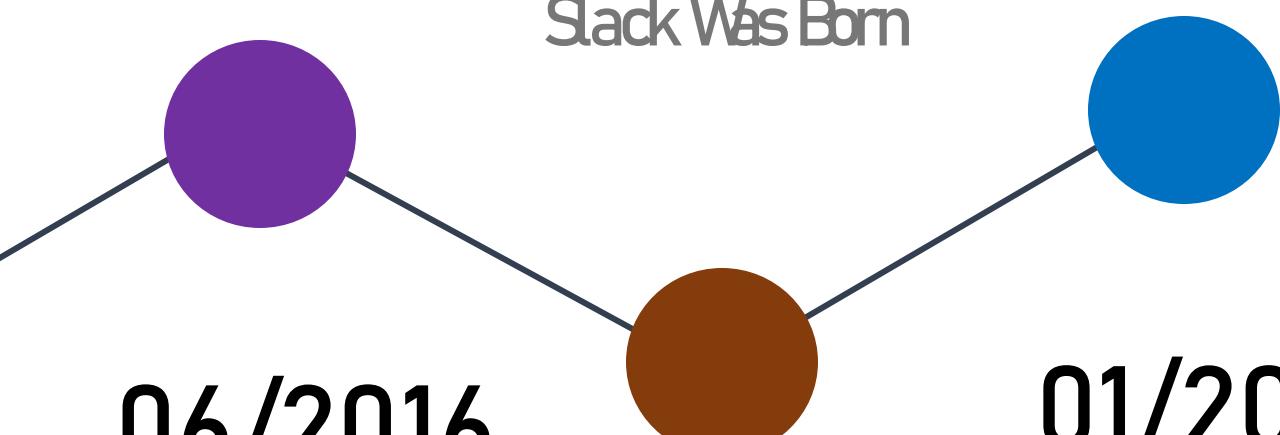
11:39 PM · Jun 29, 2016 · Twitter Web Client



Rob Sewell
@sqldbawithbeard

A Slack Channel sqlps.io/slack/ Trello Boards SQPS sqlps.io/vote SSMS sqlps.io/SSMS Come & have your say

6:35 PM · Jun 28, 2016 · Tweetium for Windows



06/2016
First Community Contributions

06/2016
SQL Community
Slack Was Born

01/2017
The Road to 1.0
starts

new year, new standardized coding style

POSTED ON JANUARY 3, 2017 BY CHRISSY LEMAIRE

First, I'd like to thank everyone for a super amazing year! 🎉 Back at the start of 2016, GitHub reports that there were two contributors to the dbatools repository and now there are 32, excluding bots. THIRTY TWO! Cheers, y'all 🥂 That's beyond amazing and I don't even have the words to describe how excited I am to be a part of this incredibly fun and useful project.

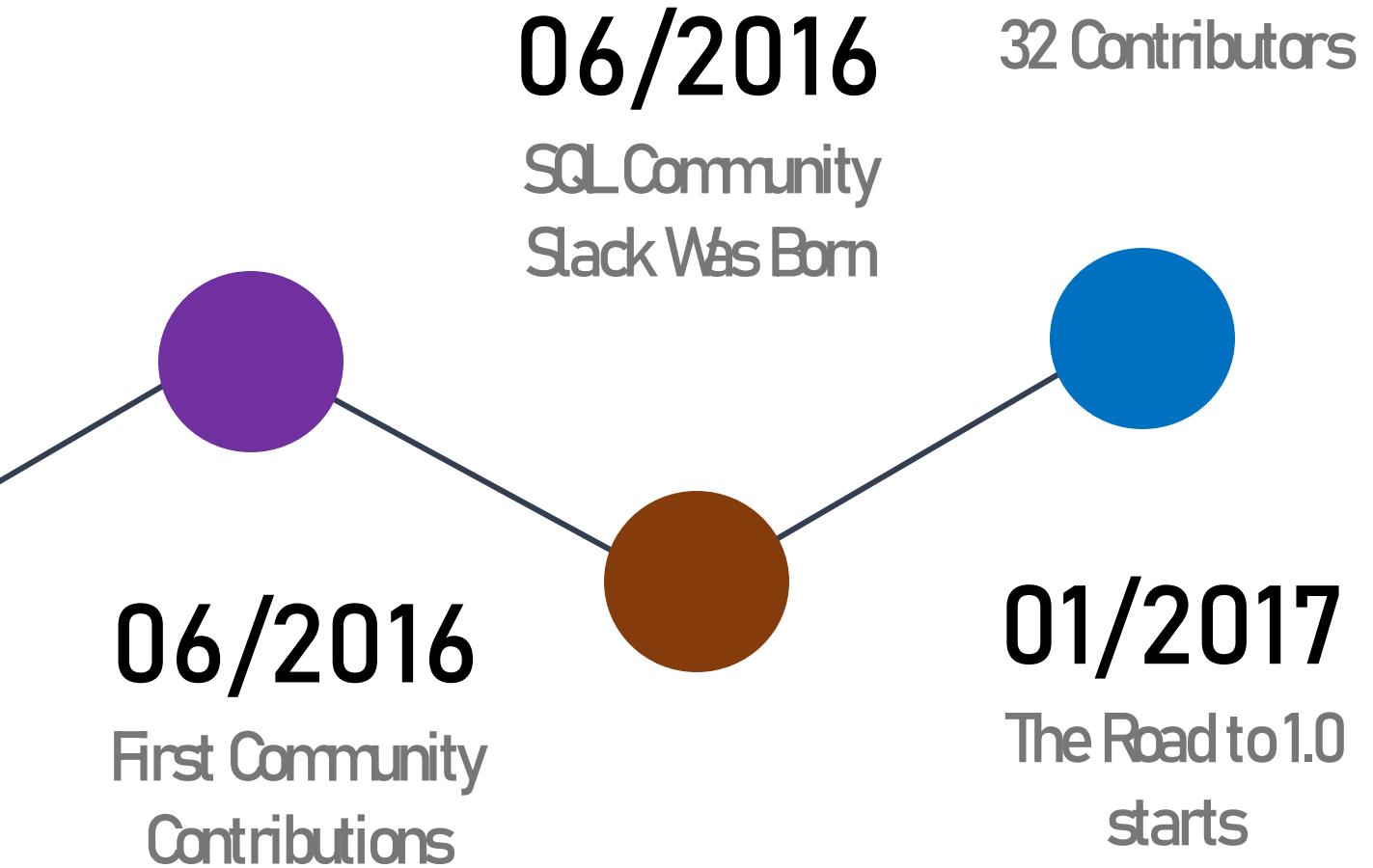
With the help of these 32 contributors, the module has grown from 23 [commands](#) to 106! That's 106 ways to help ease the administrative burden faced by SQL Server DBA's and developers.

The good, the bad, and the beautiful

A large majority of the progress we made was beautiful, but there was some ugly. Along the way, during nights of caffeine-fueled coding streaks, I tried my best to keep parameter names, outputs and documentation consistent, but I wasn't as successful as I'd hoped. Without a well thought out style guide, there were 31 other people who didn't have a strict standard to follow, either. Our templates helped but they weren't a perfect solution.

I can say that I wish I had taken the time to make a style guide from the start but that wouldn't be true. Now is actually the best time — now have a variety of commands with a variety of requirements that didn't exist in January of 2016.

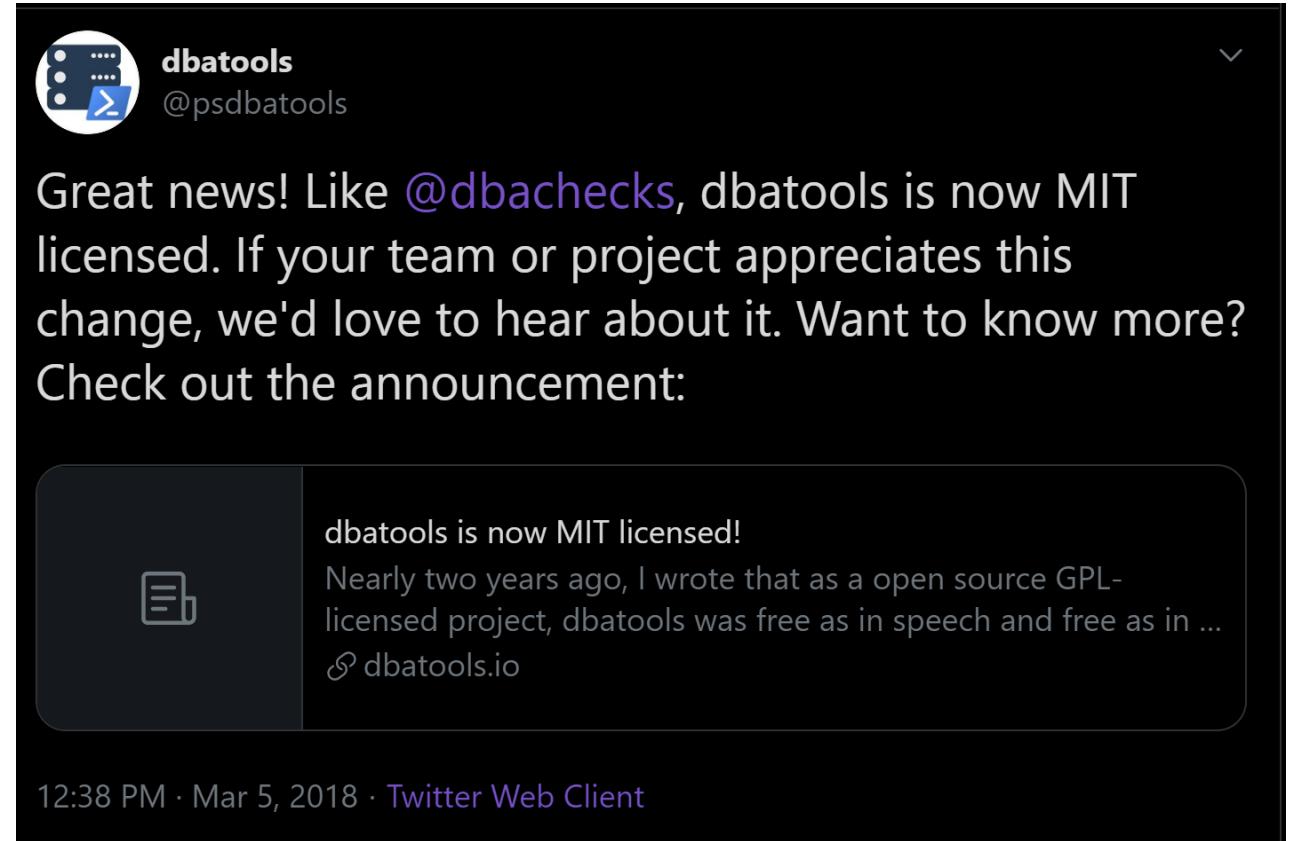
We expect that the code freeze will take about 2 months



01/2017
The Road to 1.0
starts

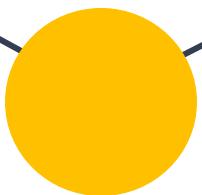
32 Contributors

03/2018
MT Licence



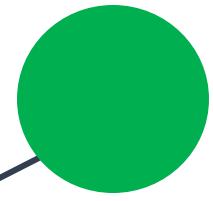
03/2018

MT Licence



06/2019

dbatools 1.0



dbatools 1.0 has arrived 🎉

We are so super excited to announce that after 5 long years, dbatools 1.0 is publicly available! Our team had some lofty ...

🔗 dbatools.io

6:40 AM · Jun 20, 2019 · Twitter Web Client

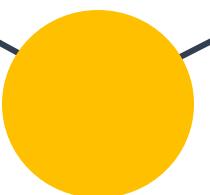
The screenshot shows a tweet from the account @psdbatools. The tweet text is "dbatools 1.0 has arrived 🎉". Below the text is a link to dbatools.io. At the bottom of the tweet, it says "6:40 AM · Jun 20, 2019 · Twitter Web Client". To the left of the tweet, there are two screenshots of the dbatools software interface. The top screenshot shows a window titled "Local Server Groups" with a list of server groups. The bottom screenshot shows a window titled "Local Server Groups" with a list of server groups and some descriptive text about server groups in SQL Server.

03/2018

MT Licence

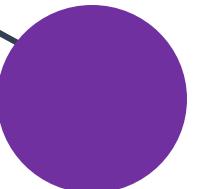
04/2023

dbatools 2.0

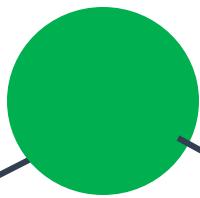


06/2019

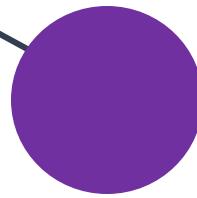
dbatools 1.0



06/2019
dbatools 1.0



04/2023
dbatools 2.0



Apr 28, 2023
potatoqualitee
v2.0.0
ffb7b37 ✓
Compare ▾

v2.0.0

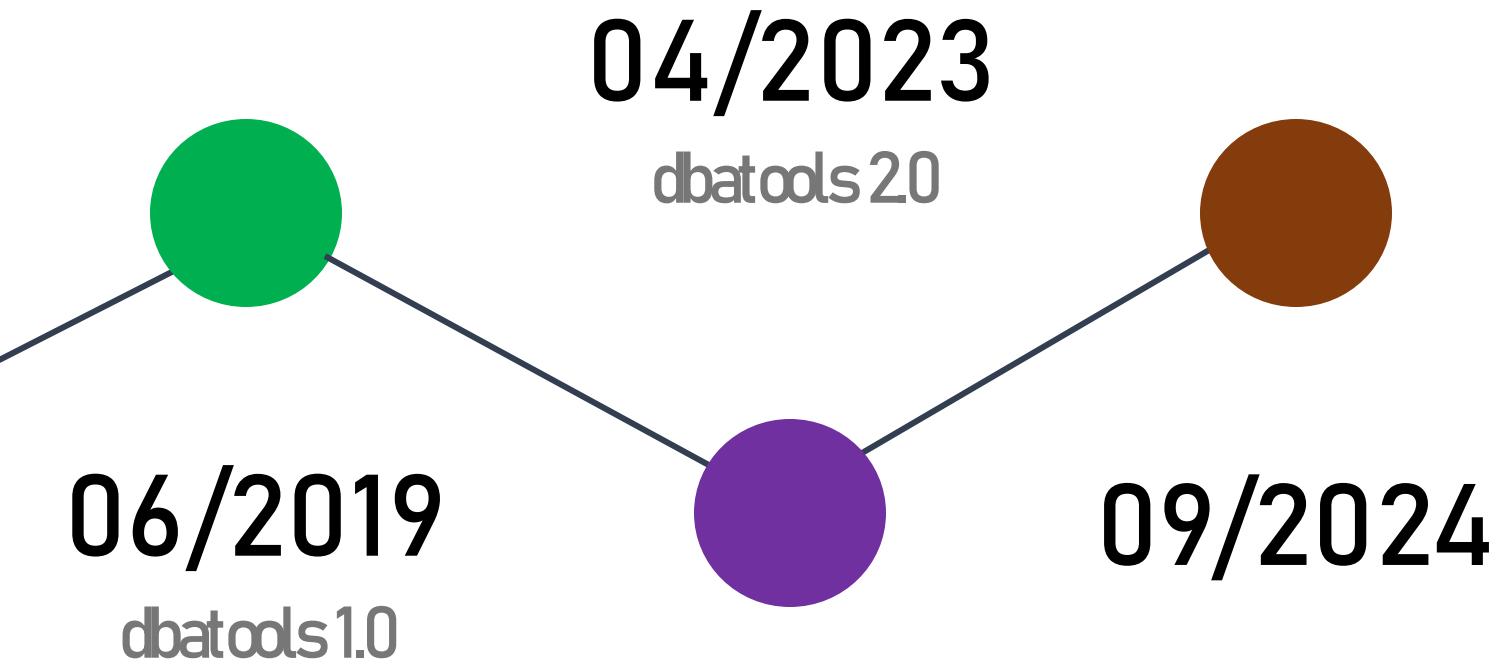
After 5 months of hard work, dbatools 2.0 is finally here!

THIS RELEASE INCLUDES BREAKING CHANGES.

Most notably, we updated the SQL Server libraries, which brings more power, bug fixes and breaking changes of its own. The one that will cause the most headaches is the change to encryption. Now, Trust Certificate is set to false and Encrypt is set to true. We wrote a few posts about this:

- [New Encryption and Certificate Defaults in Microsoft's SQL Server Connection Provider](#)
- [Configuring network encryption for SQL Server](#)
- [New Certificate and Encryption Defaults in dbatools 2.0](#)

Our library files (the DLLs) are also now included in their own module, [dbatools.library](#). This means that dbatools will ultimately be smaller in size and take up less disk space for those who update often. It also means that [the way you install dbatools in offline environments has changed](#).

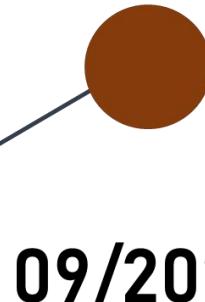


Aug 4
potatoqualitee
v2.1.23
7ad0415
Compare ▾

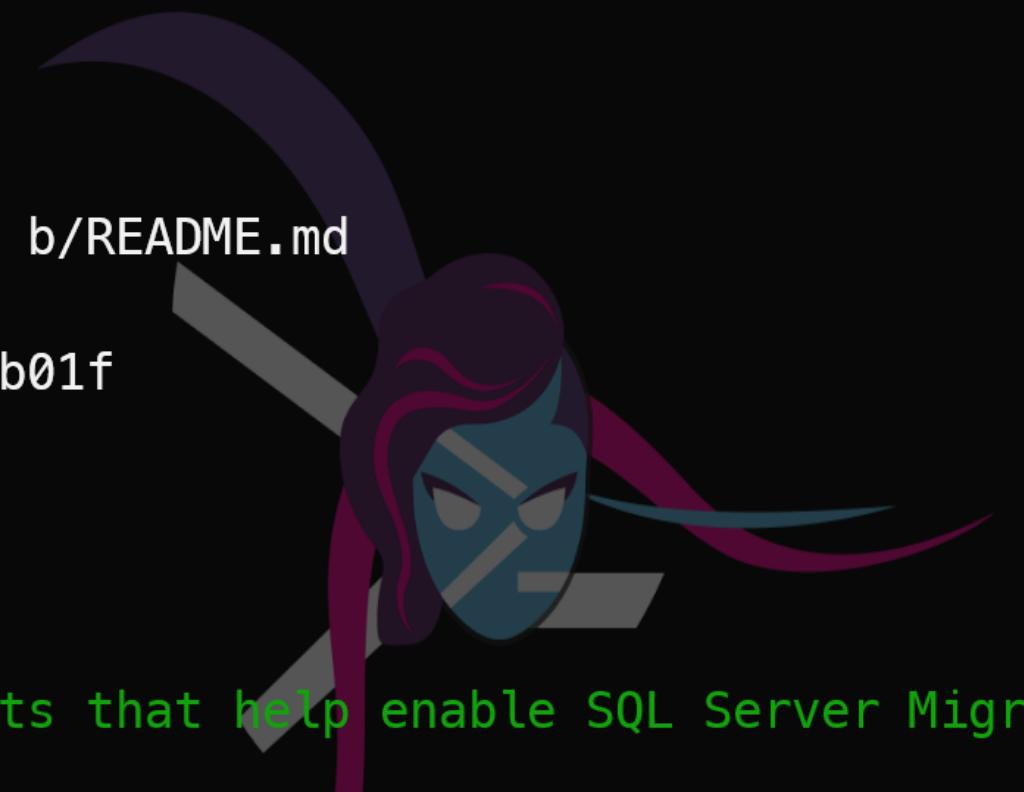
v2.1.23 Latest

What's Changed

- Update dbatools-buildref-index.json SQL
- Make Get-DbaPrivilege more efficient by
- Reset-DbaAdmin: Fix parameter name by



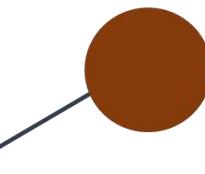
09/2024



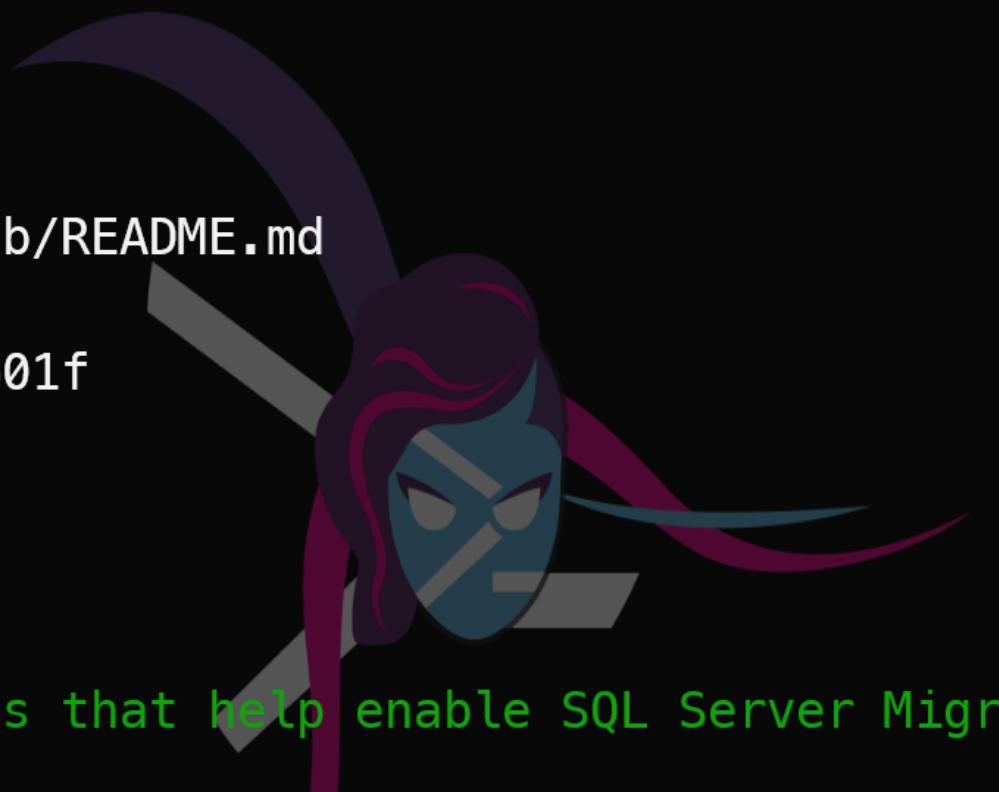
```
mrrob@BeardLaptop ~ + | v
  └── dbatools └── development └── ?1 └── RAM: 23/31GB
19
└ git show bf57670c4bbebb87767cbb00ab443d5615f87f4
commit bf57670c4bbebb87767cbb00ab443d5615f87f4
Author: ctrlbold <clemaire@gmail.com>
Date:   Tue Feb 3 00:50:31 2015 +0100

    Initial commit

diff --git a/README.md b/README.md
new file mode 100644
index 0000000..1abfdb01f
--- /dev/null
+++ b/README.md
@@ -0,0 +1,2 @@
+# sqlmigration
+A collection of scripts that help enable SQL Server Migrations
```



09/2024



```
mrrob@BeardLaptop ~ + | v
  └── dbatools └── development └── ?1 └── RAM: 23/31GB
    19
      └── git show bf57670c4bbebb87767cbb00ab443d5615f87f4
        commit bf57670c4bbebb87767cbb00ab443d5615f87f4
        Author: ctrlbold <clemaire@gmail.com>
        Date:   Tue Feb 3 00:50:31 2015 +0100

          Initial commit

          diff --git a/README.md b/README.md
          new file mode 100644
          index 00000000..1abfdb01f
          --- /dev/null
          +++ b/README.md
          @@ -0,0 +1,2 @@
          +# sqlmigration
          +A collection of scripts that help enable SQL Server Migrations
```

1785 files changed, 282893 insertions(+), 2 deletions(-)

Windows Home dbatools GitHub development ≡ ?1 | RAM: 22/31GB
git diff --stat bf57670c4bbebb87767cbb00ab443d5615f87f4

09/2024

1785 files changed, 282893 insertions(+), 2 deletions(-)

Windows Home dbatools GitHub development ≡ ?1 | RAM: 22/31GB
git diff --stat bf57670c4bbebb87767cbb00ab443d5615f87f4



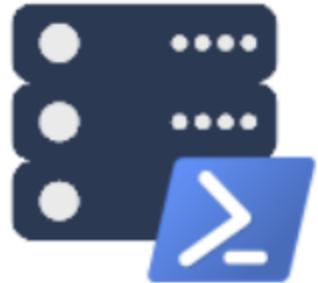
4,650,874

Downloads

09/2024

1785 files changed, 282893 insertions(+), 2 deletions(-)

Windows Home dbatools GitHub development ✒ ?1 | RAM: 22/31GB
git diff --stat bf57670c4bbebb87767cbb00ab443d5615f87f4



4,650,874

Downloads

09/2024

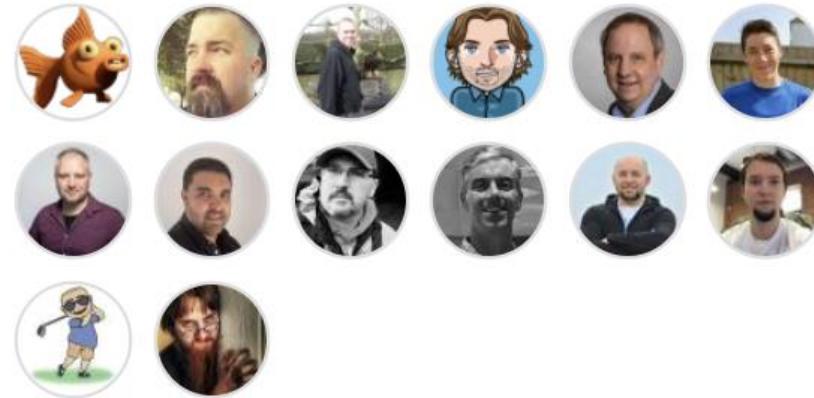
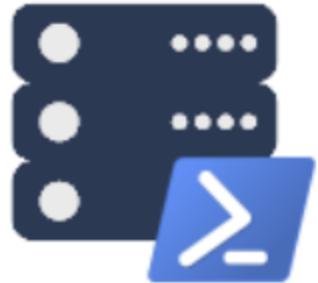
Windows Home dbatools GitHub development ✒ ?1
git rev-list --count HEAD

17272

1785 files changed, 282893 insertions(+), 2 deletions(-)

```
└─ [Windows] ── [Home] ── dbatools ── GitHub development ── [Edit] ?1 ── | RAM: 22/31GB  
git diff --stat bf57670c4bbebb87767cbb00ab443d5615f87f4
```

Contributors 257



4,650,874

Downloads

09/2024

```
└─ [Windows] ── [Home] ── dbatools ── GitHub development ── [Edit] ?1  
git rev-list --count HEAD
```

17272



07/2014

Need to Migrate
Sharepoint
databases

07/2014

Published to
GitHub &
ScriptCenter



06/2016

First Community
Contributions

06/2016

SQL Community
Slack Was Born



32 Contributors

01/2017

The Road to 1.0
starts



03/2018

MIT Licence



06/2019

dbatools 1.0



09/2024

04/2023

dbatools 2.0



PsResourceGet

- New PsResourceGet gives
 - Install-PsResource
 - Set-PsResourceRepository
 - Has a `-ReInstall` parameter so you don't have all the versions on your machine
- You can still use `Install-Module` ☺

Installation on a connected machine

```
PS > Install-PsResource dbatools
```

```
PS > Install-PsResource dbatools -Scope AllUsers
```

Installation on a connected machine

```
PS > Install-Module dbatools
```

```
PS > Install-Module dbatools -Scope CurrentUser
```

Common Parameters

- -SqlInstance
- -Database
- -SqlCredential

Common Parameters

- -EnableException

Default Parameters

```
$PSDefaultParameterValues = @{  
    '*-Dba*:SqlInstance' =  
$productionInstances  
    '*-Dba*:Database'      = $mainProdDBs  
}  
}
```

dbatools.io/defaults

**Availability Groups
Backup and Restore
Certificates and Encryption
Community Tools
Configuration
Connections
Databases
Data Masking**

Commands

- Dba

Commands

Get-Dba

Commands

Get-DbaDatabase

Commands

Get-Dba AgentJob

Commands

Get-DbaXESession

Commands

Copy-Dba Database

Commands

Copy-Dba Login

Commands

New - Dba

Commands

Add-Dba

Commands

Set - Dba

Commands

Stop-Dba

Commands

- Dba AgDatabase

Commands

- Dba DbMail

Commands

-Dba

Rep1Article

Commands

- Dba Spn

Commands

- Dba Query



Upgrade your PowerShell skills



Upgrade Your PowerShell Skills

Splatting

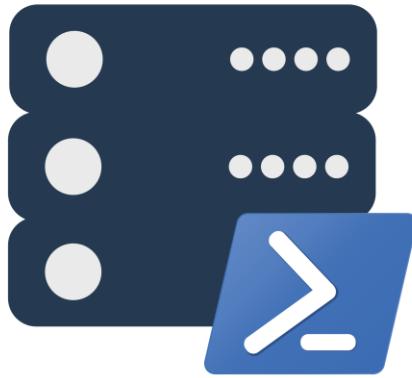
Default
Parameters

Error
handling

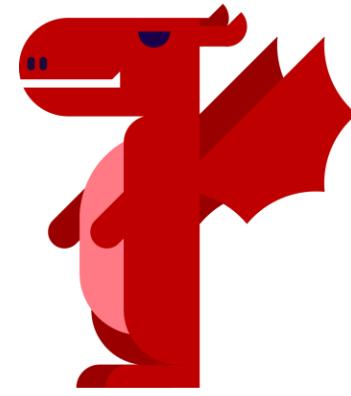
Replication



Agenda

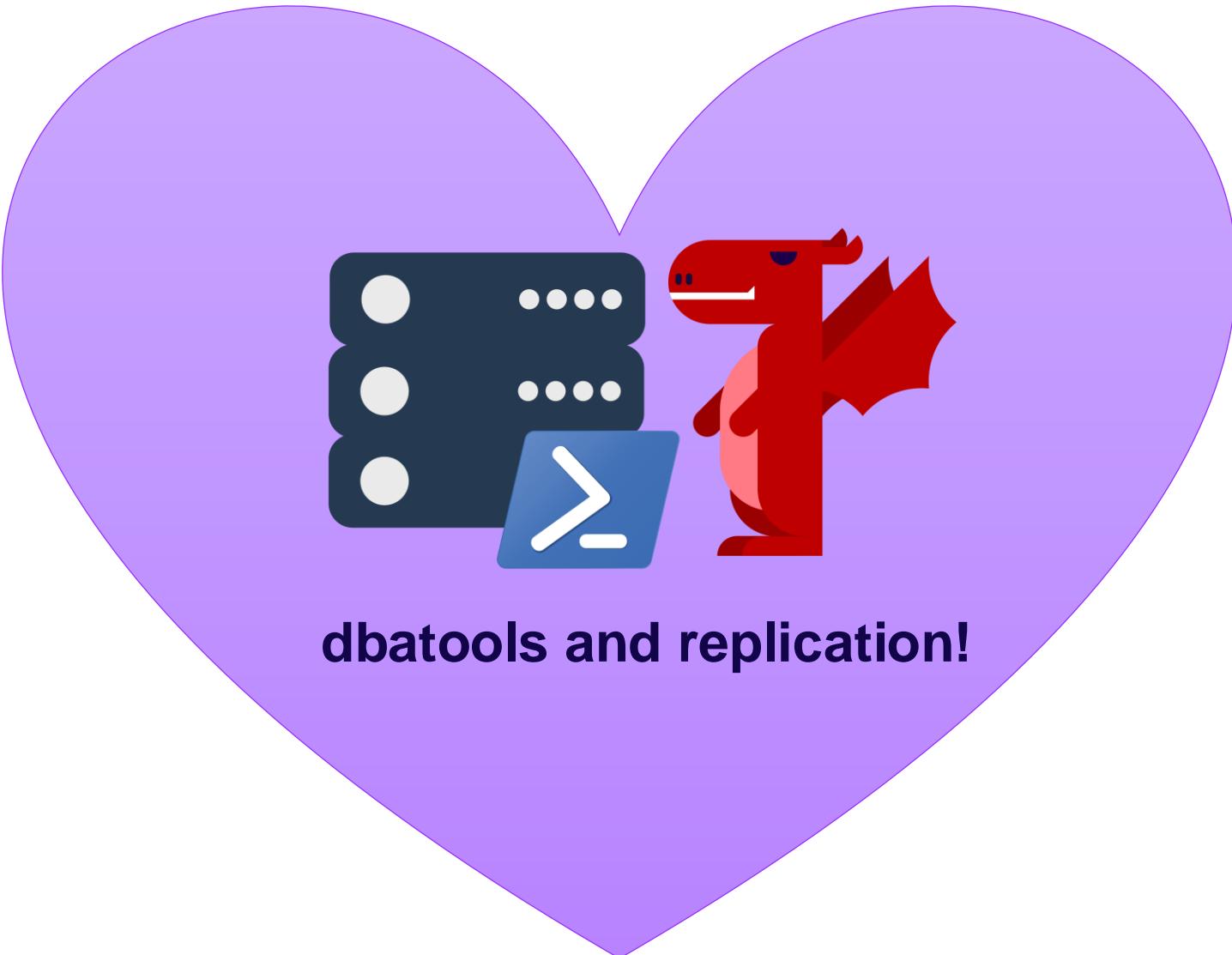


**What is
dbatools?**



**What is
replication?**

Agenda



Warnings

New
Feature

I'm definitely not
a replication
expert!

This is not about
Replication best
practices

Replication

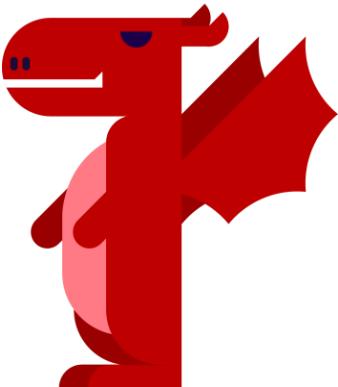
Replication copies and synchronises database objects and data from one database to another.

<http://msdn.microsoft.com/en-us/library/ms151198.aspx>

Around since SQL Server 6.0

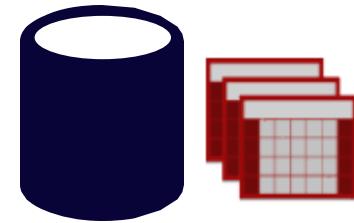
Three flavours

- Snapshot
- Transactional
- Merge

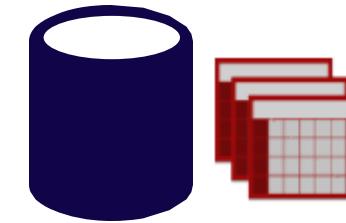


How does replication work?

Publisher
Publication
Articles



Subscribers
Subscription
Articles



Distributor

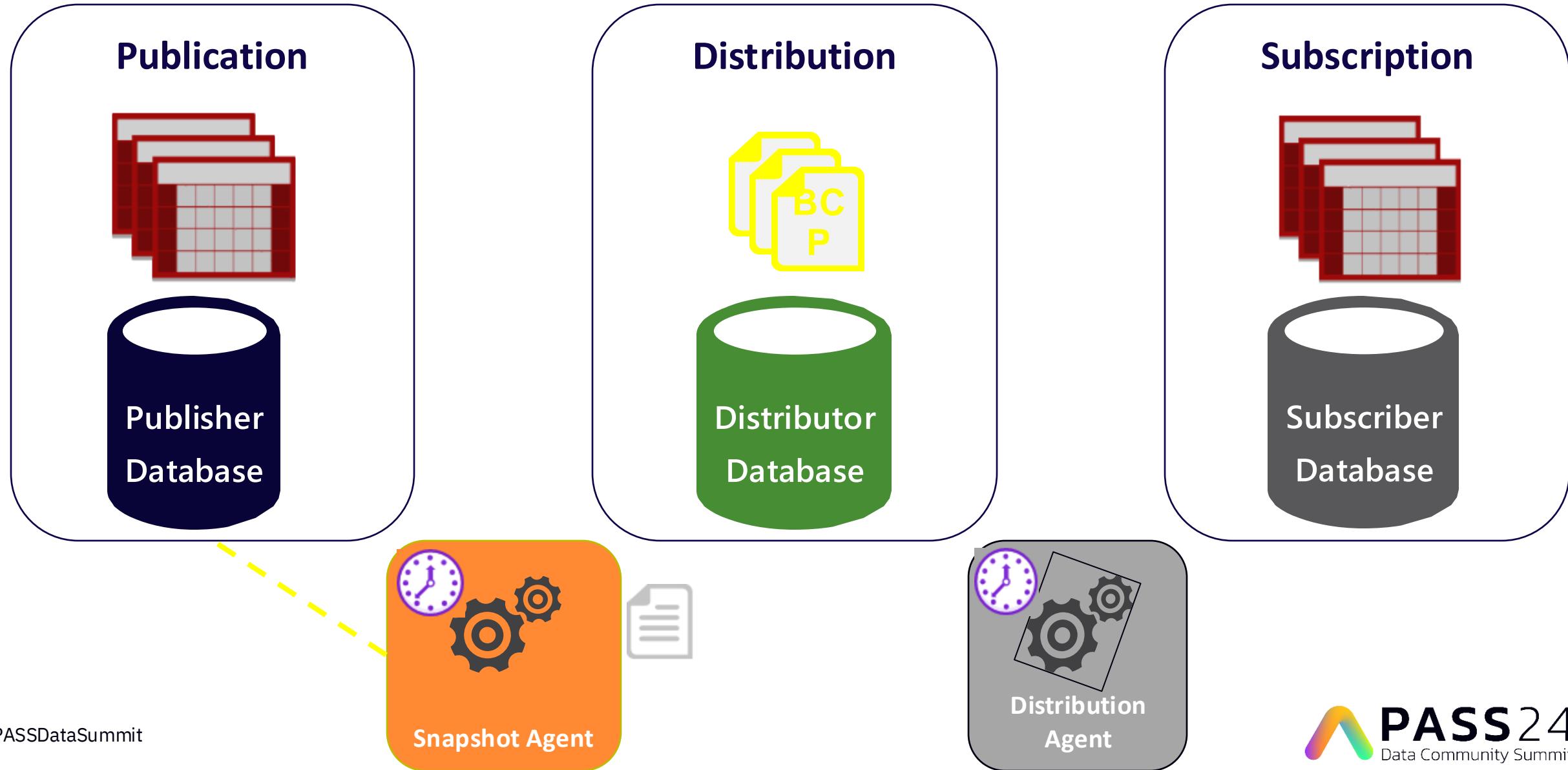


Log Reader Agent
Snapshot Agent
Distribution Agent



Snapshot Replication

Slides by William Durkin



Transactional Replication

Slides by William Durkin

Publication



Distribution



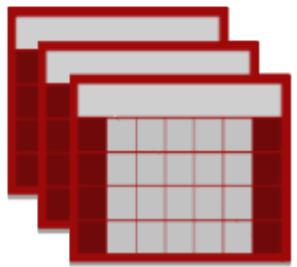
Subscription



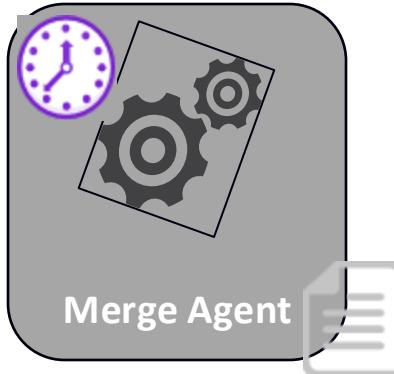
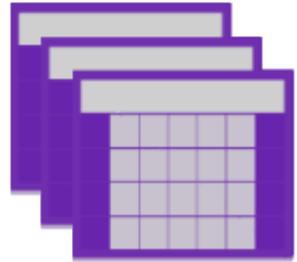
Merge Replication

Slides by William Durkin

Publication/Subscription



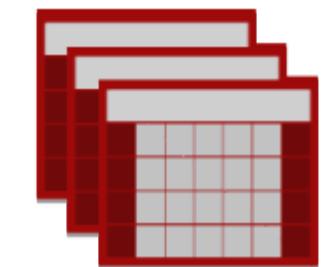
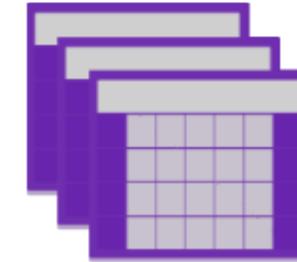
Publisher
Database



Distribution

Distributor
Database

Publication/Subscription



Subscriber
Database

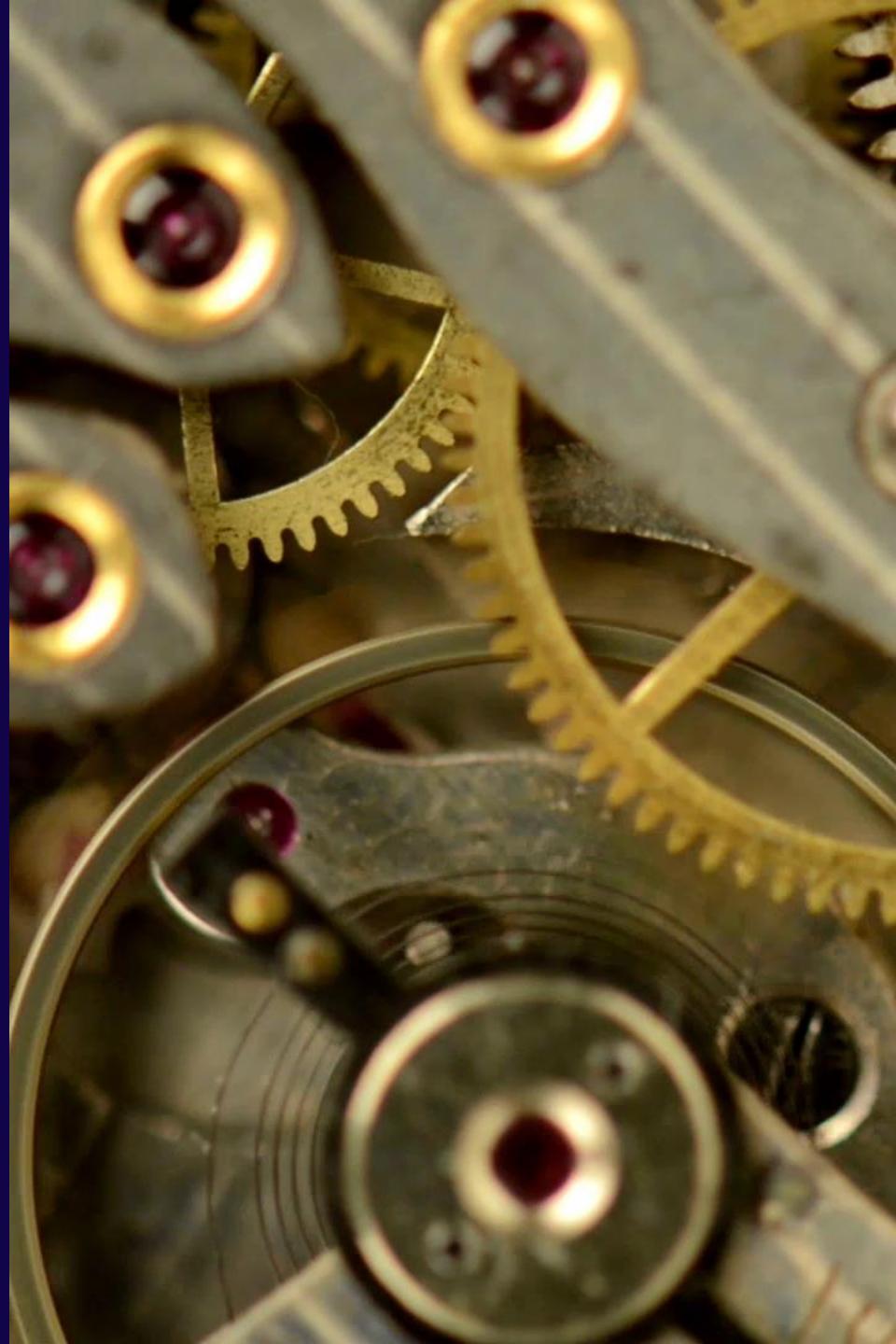
dbatools commands for replication

Distribution	<ul style="list-style-type: none">• Enable-DbaReplDistributor• Disable-DbaReplDistributor
Publishing	<ul style="list-style-type: none">• Enable-DbaReplPublishing• Disable-DbaReplPublishing
Publications	<ul style="list-style-type: none">• New-DbaReplPublication• Remove-DbaReplPublication
Articles	<ul style="list-style-type: none">• Get-DbaReplArticle• Get-DbaReplArticleColumn• Add-DbaReplArticle• Remove-DbaReplArticle• New-DbaReplCreationScriptOptions
Subscriptions	<ul style="list-style-type: none">• New-DbaReplSubscription• Remove-DbaReplSubscription• Get-DbaReplSubscription
Misc	<ul style="list-style-type: none">• Get-DbaReplServer• Get-DbaReplDistributor• Get-DbaReplPublication

Find-DbaCommand –Tag Replication

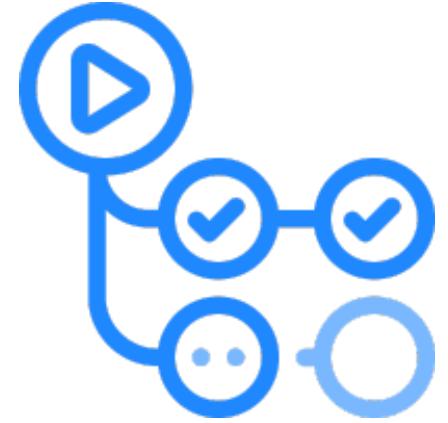


Automation Time



GitHub Actions

- CI\CD Platform
- Allows you to automate things
- Based on triggers
 - Schedule
 - Commit
 - Pull Request
 - Issue
- Uses GitHub Hosted or Self-Hosted runners



Azure DevOps Pipelines



- CI\CD Platform
- Allows you to automate things
- Based on triggers
 - Schedule
 - Commit
 - Pull Request
 - Work Item (not as easy – need to use webhook trigger)
- Uses Microsoft Hosted or Self-Hosted agents

GitHub Actions use cases

- On push – run automated tests
 - On schedule – look for issues that are stale
 - Manually – publish package to NuGet
-
- On issue creation – add article to replication?

[Code](#) [Issues 2](#) [Pull requests](#)[Actions](#)[Projects](#)[Security](#)[Insights](#)[Settings](#)

Actions

[New workflow](#)[All workflows](#)

Create_resource_group

take_it_away_take_it_away_take_it_aw...

Management

[Caches](#)[Attestations](#)[Runners](#)

All workflows

Showing runs from all workflows

[Filter workflow runs](#)

526 workflow runs

Event ▾ Status ▾ Branch ▾ Actor ▾

[✓ take_it_away_take_it_away_take_it_away_now](#)

take_it_away_take_it_away_take_it_away_now #238: Scheduled

main

15 hours ago

4m 41s

[✓ take_it_away_take_it_away_take_it_away_now](#)

take_it_away_take_it_away_take_it_away_now #237: Scheduled

main

2 days ago

5m 14s

[✓ take_it_away_take_it_away_take_it_away_now](#)

take_it_away_take_it_away_take_it_away_now #236: Scheduled

main

3 days ago

4m 4s

[✓ take_it_away_take_it_away_take_it_away_now](#)

take_it_away_take_it_away_take_it_away_now #235: Manually run by SQLDBAWithABeard

main

3 days ago

13m 51s

[❗ so we hav eht ether db as well](#)Create_resource_group #288: Commit [7682112](#) pushed by SQLDBAWithABeard

main

3 days ago

2m 26s

[✓ Create_resource_group](#)

Create_resource_group #287: Manually run by SQLDBAWithABeard

main

3 days ago

35m 47s



Demo Time

On issue creation – add article to replication

Performance

 PASS24
Data Community Summit



Performance

Like T-SQL

Latest is
best

Measuring

Why Is Performance Important?



Why Is Performance Important?

- Pay As You Go Cost

Why Is Performance Important?

- Pay As You Go Cost



Why Is Performance Important?

- Pay As You Go Cost
- Maintenance Windows

Why Is Performance Important?

- Pay As You Go Cost
- Maintenance Windows
- Reduce Resource Usage

Just Like You Would With T-SQL

- Measure
 - Make a Change
 - Test
- The result

Just Like You Would With T-SQL

- Measure
- Make a Change
- Test

The result AND the execution

```
/*
  On the next two...What's the difference?!
*/
SELECT *
  FROM dbo.Users
 WHERE AccountId IN (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16)
GO
```

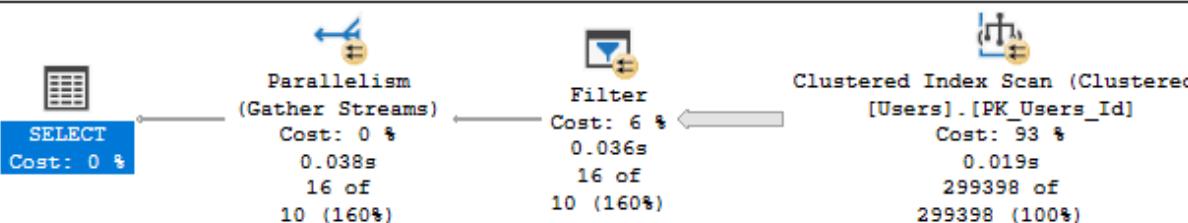
```
SELECT *
  FROM dbo.Users
 WHERE AccountId BETWEEN 1 AND 16
GO
```

/*
 This is the same as the previous one
*/

100 % < □ Results | Messages | Execution plan

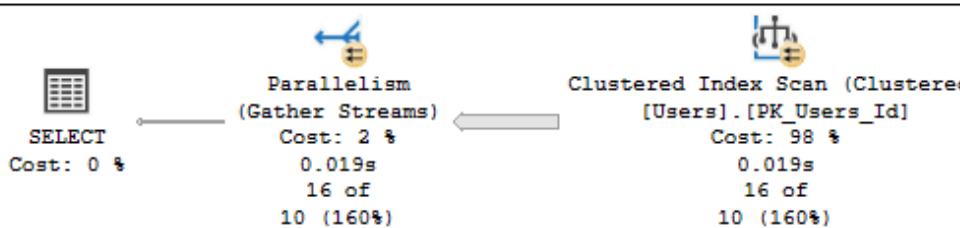
Query 1: Query cost (relative to the batch): 51%

```
SELECT * FROM dbo.Users WHERE AccountId IN (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16)
```



Query 2: Query cost (relative to the batch): 49%

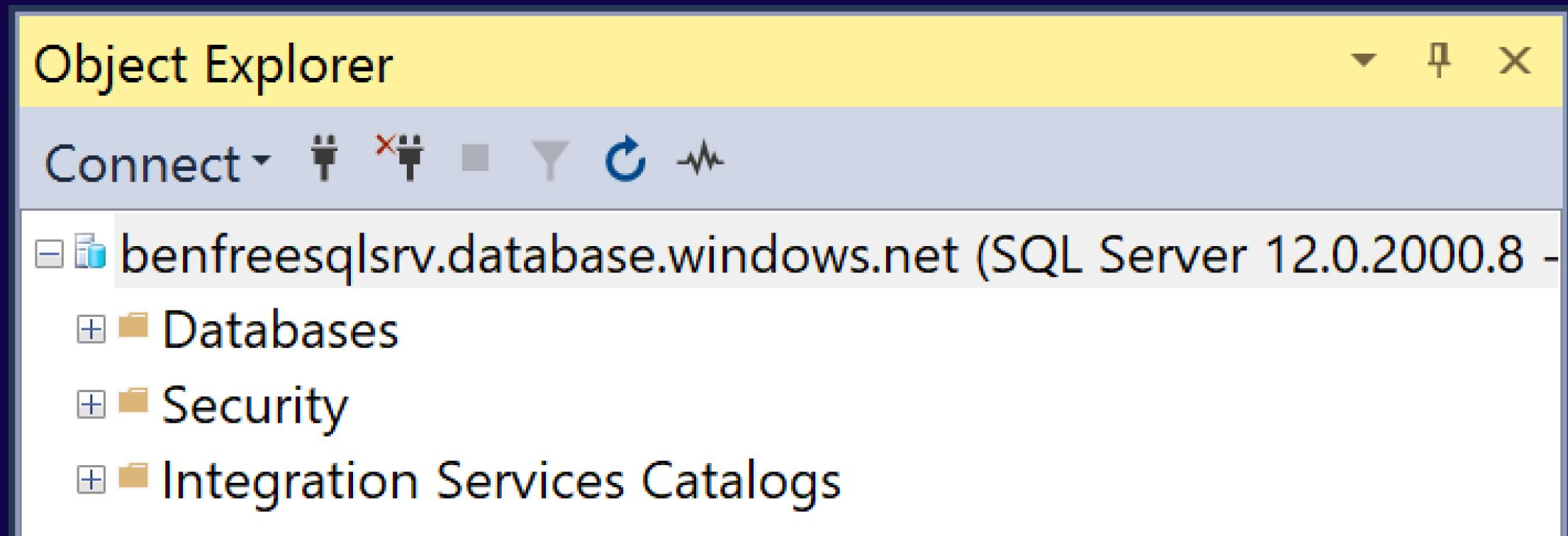
```
SELECT * FROM [dbo].[Users] WHERE [AccountId]>=@1 AND [AccountId]<=@2
```



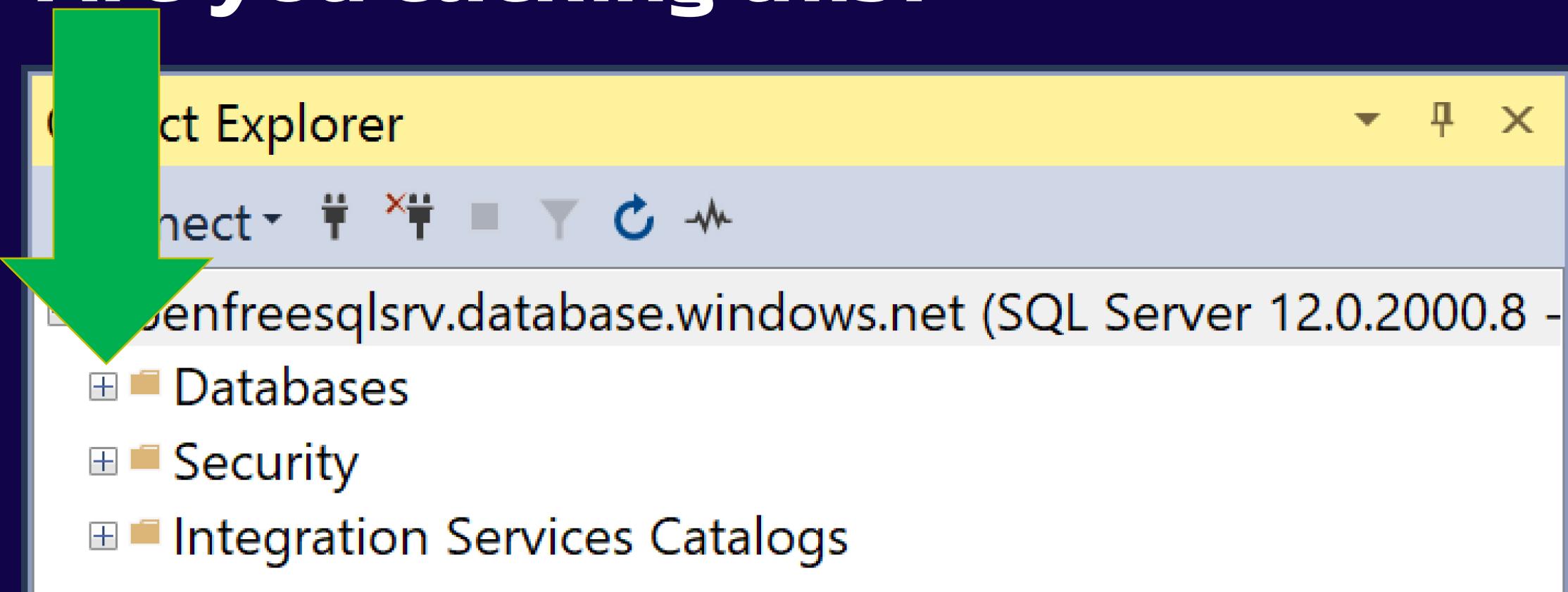
Use the Latest PowerShell

73% (*)

Your Instance has 2500 databases



Your Instance has 2500 databases. Are you clicking this?



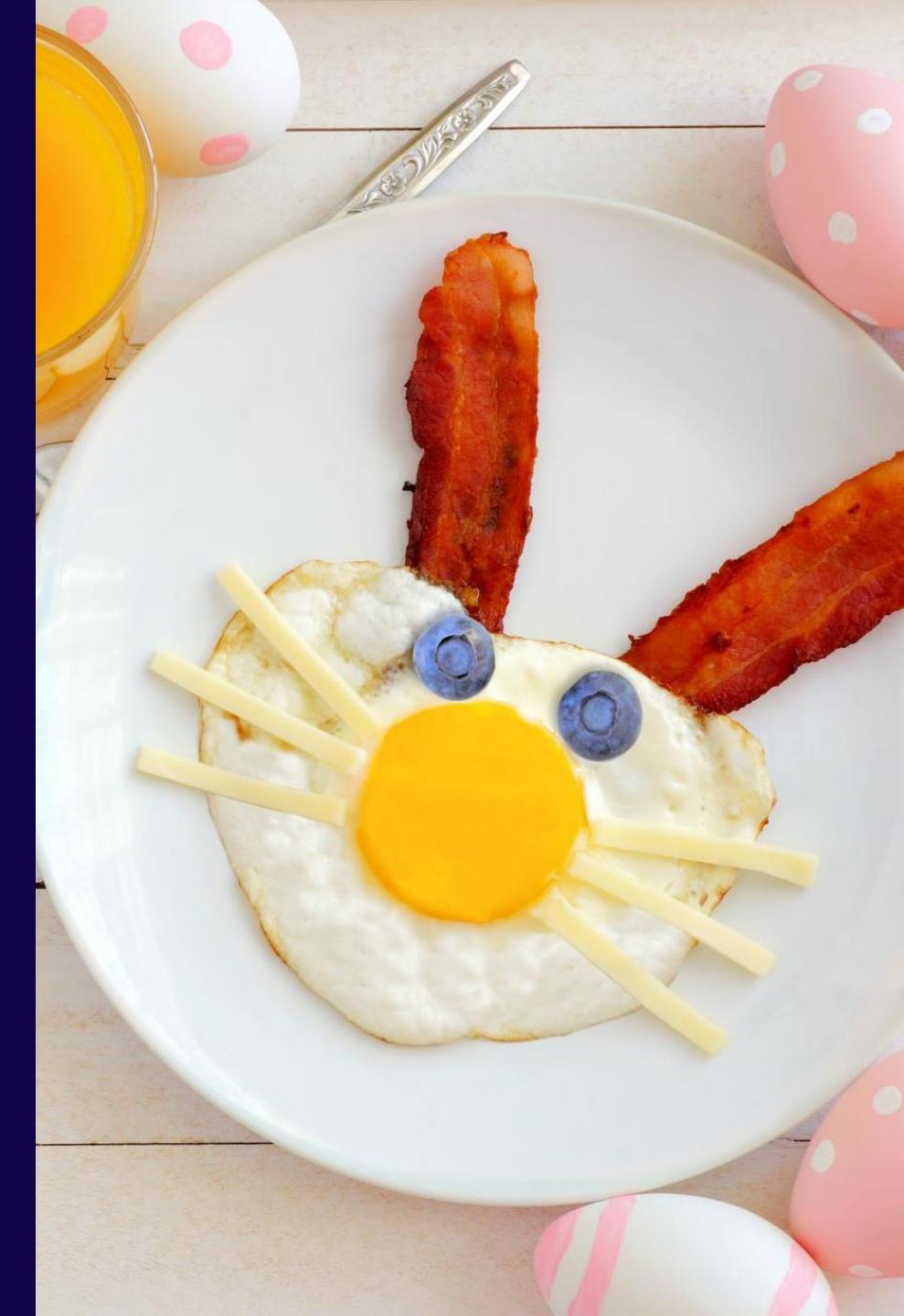
It's the same SMO



Lunch Time!

We start prompt
at

13:30 (1:30 pm)



Scale

**How do we manage
1000's of instances and
databases?**

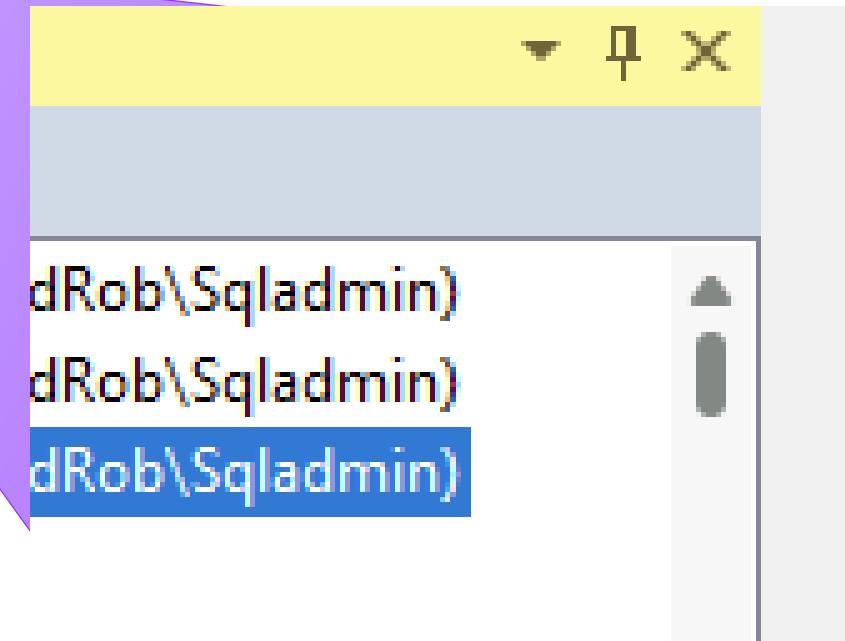
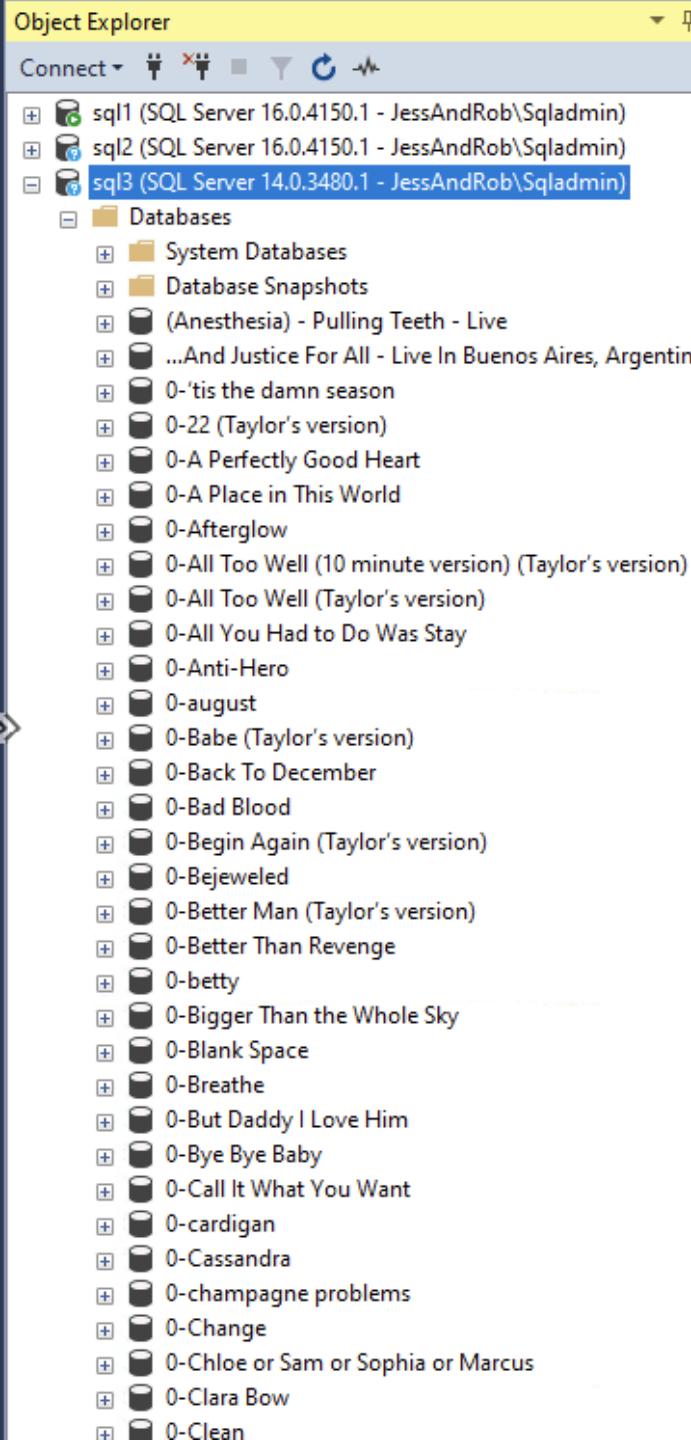


Manual is ok for one thing



But when you have thousands?





How do we manage A LOT of
Servers & Databases?

PowerShell Universal

'Ultimate command centre for your PowerShell environment'



APIS



DASHBOARDS



SCHEDULED TASKS

Free!

- A lot of these features are free
 - Too many to go through – we'll see in the demos
- Everything you see today is free

Premium Features

- Rate Limiting
- Event Triggers
- Concurrency Controls
- More security options
 - OpenID Connect
 - Windows Auth
- SQL Server\PostgreSQL support

Universal Hosting

- Windows, Linux, Mac OS
- Docker containers
- Azure
- IIS
- Windows Service

Development

- Within Universal
- Or VSCode
 - With PowerShell Universal extension



PowerShell Universal

Ironman Software | 50,488 installs | ★★★★★ (5) | Free

Visual Studio Code tools for PowerShell Universal

[Install](#)[Trouble Installing?](#)[Overview](#)[Version History](#)[Q & A](#)[Rating & Review](#)

PowerShell Universal

PowerShell Universal is a single pane of glass to manage your automation environment. This extension helps in the development of tools using PowerShell Universal.

- [Documentation](#)
- [Forums](#)
- [Purchasing](#)

Features

APIs

The screenshot shows a user interface for managing APIs. At the top, there's a header with the text "POWERSHELL UNIVERSAL" and three dots "...". Below this is a navigation bar with a dropdown menu labeled "APIS" containing "(GET) /test" and "(GET) /test33". To the right of the menu are icons for file operations: a folder, a document, and a circular arrow.

Categories

[Other](#)

Tags

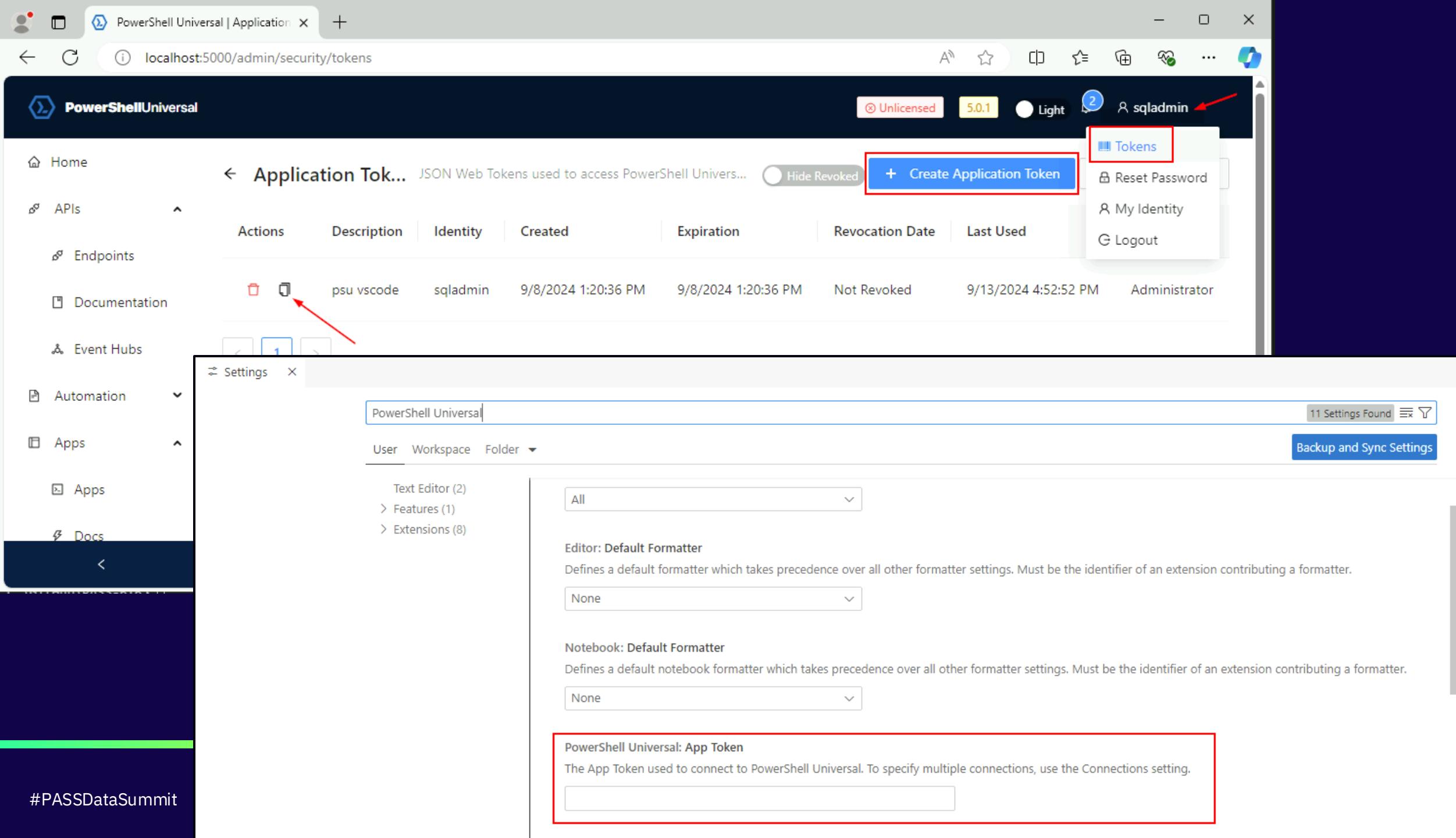
[debuggers](#) [powershell](#) [powershell universal](#)
[universal automation](#) [universal dashboard](#)

Works with

Universal

Resources

[Issues](#)
[Repository](#)
[Homepage](#)
[License](#)
[Changelog](#)
[Download Extension](#)



APIs

- Create endpoints – written in PowerShell
- GET, POST, PATCH, DELETE
- Call with Invoke-RestMethod
 - Or curl, Python, whatever you want

Dashboards\Apps

- New-UDGrid – for layout
 - Helps with designing good looking pages
 - Each row has 12 grid squares

Community

- There is a thriving community developing on this platform
- And Adam!
- <https://forums.ironmansoftware.com/>
- <https://github.com/ironmansoftware/issues>

Docs

- Docs are excellent:
 - <https://docs.powershelluniversal.com/>

Fabric Magic

And dbatools.ai



PSFabricTools

PSFabricTools

PowerShell module to simplify working with Fabric APIs

How to Use

This module currently focuses just on Fabric recovery points - but more could be added in the future.

When you start using this module you'll need a token to authenticate - we make use of the Microsoft PowerShell module `MicrosoftPowerBIMgmt.Profile` for the authentication. You'll need to call `Connect-PowerBIServiceAccount` to be able to use this module.

You will also need to know your `WorkspaceGUID` and `DataWarehouseGUID` which you can get from the url when you are connected to the data warehouse.

[PowerShell Gallery | PSFabricTools 0.3.2](#)

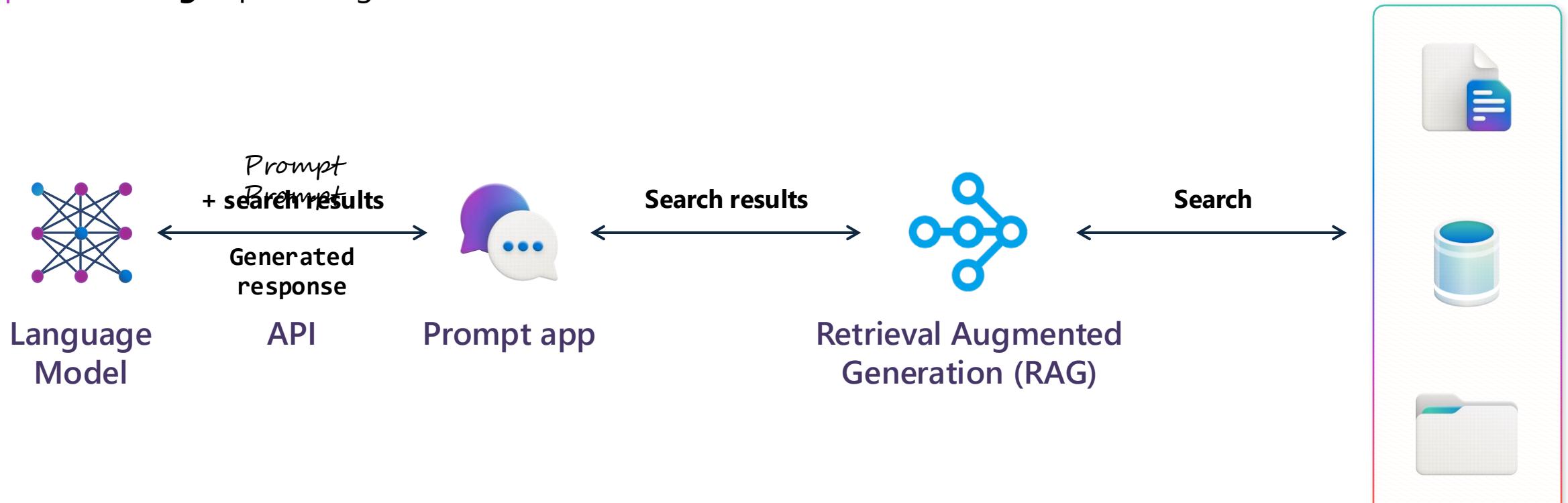
[PowerShell module to simplify working with Fabric APIs \(github.com\)](#)



Let's get grounded on prompts

Fine tuning = customizing a trained model

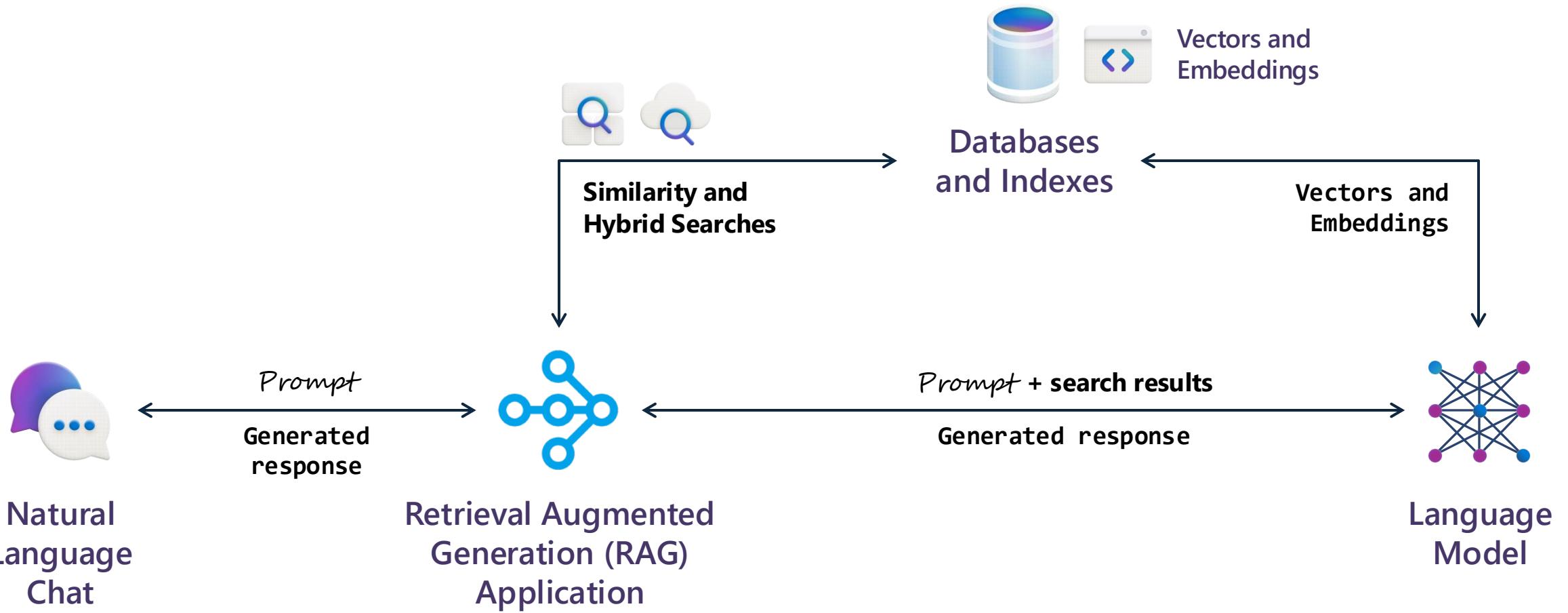
Grounding = providing additional context to a trained model



Prompt Engineering

Better prompt = better responses

Building Generative AI applications with databases



dbatools.ai

<https://github.com/potatoqualitee/dbatools.ai>

dbatools.ai

```
dbatools.ai > public > New-DbaiAssistant.ps1 > function New-DbaiAssistant ()  
1   sistant {  
2  
3     if (-not $PSBoundParameters.FunctionDescription) {  
4       $FunctionDescription = "Use this function to answer user questions about the database. Input should be a fully  
5     }  
6  
7     Write-Verbose "Processing database: $($db.Name)"  
8     $schema = ConvertTo-SqlString -Database $db -Force:$Force -Model $Model  
9     $tokenCount = (Measure-TuneToken -InputObject $Instructions -Model cl100k_base).TokenCount  
10    Write-Verbose "Token count for instructions: $tokenCount"  
11  
12    $toolList = @(  
13      @{  
14        "name"      = "ask_database"  
15        "description" = $FunctionDescription  
16        "parameters" = @{  
17          "properties" = @{  
18            "query" = @({  
19              "type"      = "string"  
20              "description" = "SQL query extracting info to answer the user's question. SQL should be written in plain text."  
21              $schema  
22              "The query should be returned in plain text, not in JSON."  
23            })  
24          }  
25          "type"      = "object"  
26          "required"  = @("query")  
27        }  
28      }  
29    }  
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```

You are an friendly assistant that specializes in translating natural language queries into MSSQL (T-SQL) queries.

If you return a query, use function calling/tools

****Important Instructions:****

1. Output all responses in plain text format only.
2. Do not use markdown formatting of any kind.
3. Avoid using backticks (`` ``), asterisks (`*`), underscores (`_`), or any other special characters used for ma
4. Provide examples and clarifications as plain text without any bullet points, numbering, or other formatting.

<https://github.com/potatoqualitee/dbatools.ai>

Your feedback is important to us



Evaluate this session at:

www.PASSDataCommunitySummit.com/evaluation

Thank you

Jess Pomfret



Rob Sewell

