DevOps for the SQL Server Database

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Level: Intermediate

Brian.About();

- Partner with MCW Technologies, www.mcwtech.com
- Co-author Pro ALM 2013 from Wrox
- 15 year Microsoft MVP—Development Technologies
- Linked In Learning author
  - New course DevOps for the Database with VSTS and Azure
    https://bri.gd/lildbdevopsvsts0818
  - Also Db DevOps with TFS 2018 http://bri.gd/lildbdevopstfs18
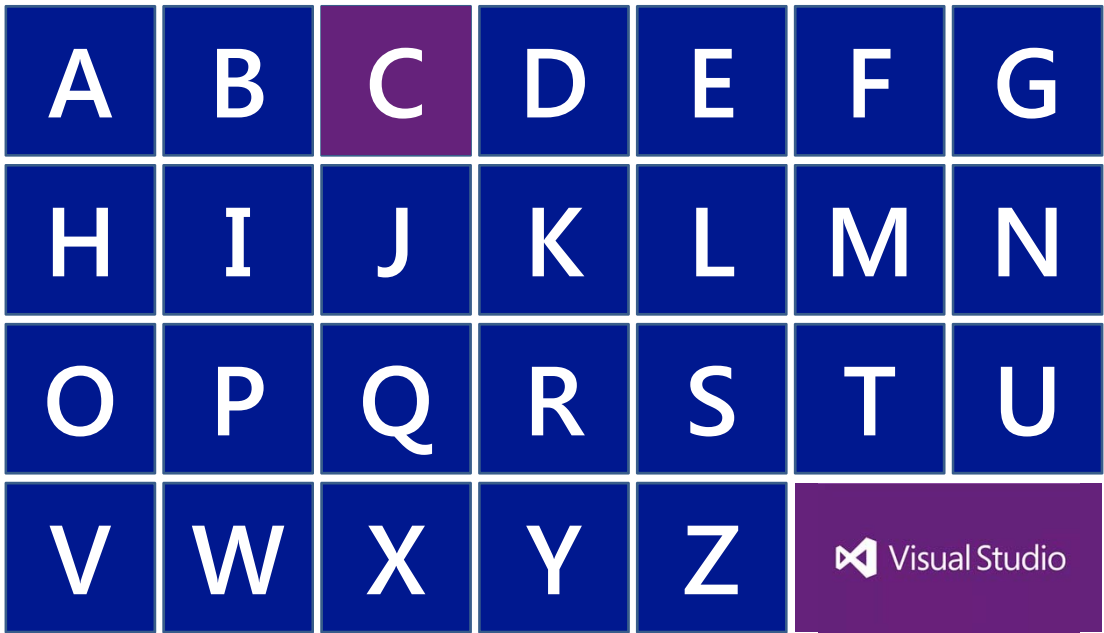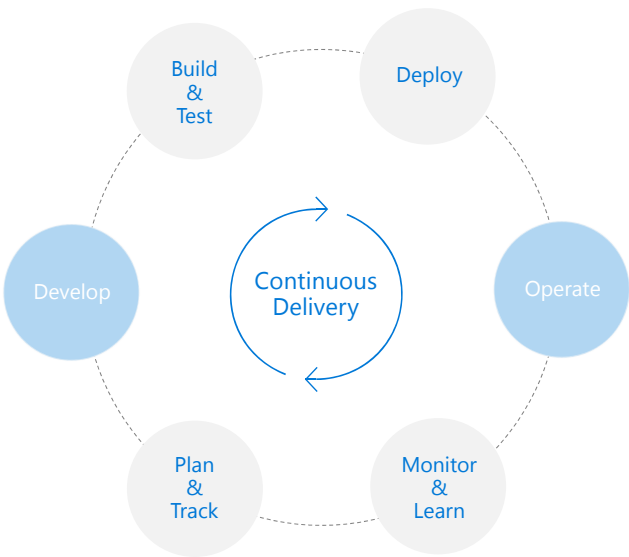- brianr@mcwtech.com | @brianrandell | blog.brianrandell.com

What is DevOps?

People. Process. Products.

> DevOps is the union of **people**, **process**, and **products** to enable continuous delivery of value to your end users.

Build & Test

Deploy

Develop

Continuous Delivery

Operate

Plan & Track

Monitor & Learn

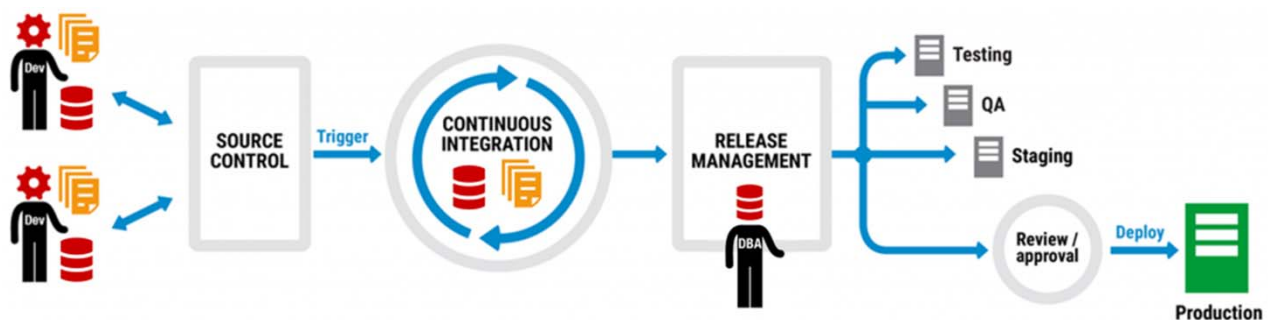| A	B	C	D	E	F	G
H	I	J	K	L	M	N
O	P	Q	R	S	T	U
V	W	X	Y	Z	Visual Studio	

Continuous

Focus on the Flow

- Continuous Integration
- Continuous Testing
- Continuous Deployment
- Continuous Feedback
- Continuous Improvement

- Continuous (Value) Delivery

Great, but how?

- Let's look at an end-to-end CI/CD pipeline
  - Manage change for a database
  - Delivery changes from developer -> shared dev -> test -> prod
- Tools I'm using
  - Microsoft SQL Server Data Tools
  - Microsoft Release Management
    - TFS 2015 Update 2 or later
    - Deployment Groups requires TFS 2018 or later
- Other Tools Available
  - Redgate
  - Octopus Deploy, ...

An End-to-end Process

Models and Databases

- SSDT approach
- Take the "catalog" offline
  - Use a "state" model
- Model database entities as DDL entities
- Publish changes by comparing model to target
  - Changes packaged as DACPAC
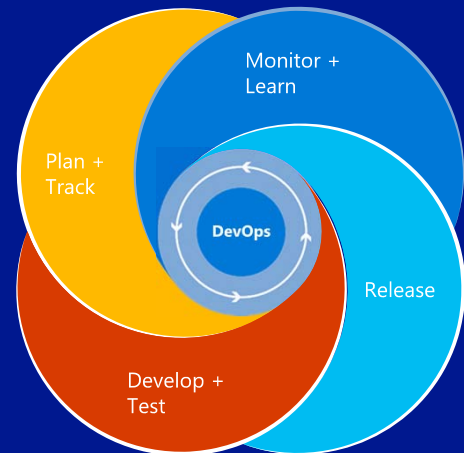 - Could use SQL scripts as well

Migrations and Databases

- EF Core is an example of what this is
- Define database via ORM
- "Migrate" changes from model

- Redgate SQL Change Automation uses migrations
  - Formally known as ReadyRoll
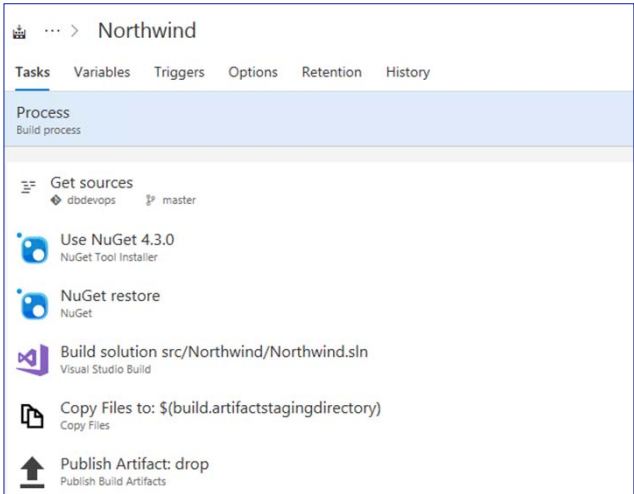 - SQL Change Automation Core included with VS 2017 Enterprise Edition

Some Considerations

- People and Process
  - Drift
  - Multiple apps using same database
- Updating the database and app together
- Data Motion
- Static Data Loading
- Compliant Test Data

Demo

Team Build Definition

Visual Studio Build Task

Release Management Task

Add tasks

Don't see what you need? Check out our Marketplace. ⬈

SQL| ✕

SQL SQL Server Database Deploy
Deploy to SQL Server Database using DACPAC or SQL scripts

SQL Server Database Deploy

SQL Server Database Deploy ⓘ   ✕ Remove

Version 0.* ⌄

Display name *
SQL DB Deploy

Deploy SQL Using * 🔗
Sql Dacpac

DACPAC File * ⓘ
$(System.DefaultWorkingDirectory)/Northwind/drop/src/Northwind/NorthwindDb/bin/Release/NorthwindDb.dacpac   ···

Specify SQL Using * 🔗
Server

Server Name * ⓘ
localhost

Database Name * 🔗
Northwind

Authentication * ⓘ
Windows Authentication   ⌄

Agent Capabilities

Requests **Capabilities**

USER CAPABILITIES
Shows information about user-defined capabilities supported by this host

➕ Add capability

Save changes   Undo changes

SYSTEM CAPABILITIES
Shows information about the capabilities provided by this host

Capability name	Capability value
Agent.ComputerName	TFS2017
Agent.Name	TFS2017
Agent.OS	Windows_NT
Agent.OSVersion	6.3.9600
Agent.Version	2.117.2
ALLUSERSPROFILE	C:\ProgramData
APPDATA	C:\Users\TfsBuild\AppData\Roaming
AzurePS	3.1.0

SqlPackage	C:\Program Files (x86)\Microsoft SQL Server\130\DAC\bin\SqlPackage.exe

Azure SQL Database

🗄️ **Execute Azure SQL : DacpacTask**
Azure SQL Database Deployment   ✓ ⠿

Azure SQL Database Deployment ⓘ   ✕ Remove

Version 1.*

Display name *

Execute Azure SQL : DacpacTask

Azure Connection Type

Azure Resource Manager

Azure Subscription * ⓘ | Manage ↗

Add Azure Resource Manager Service Endpoint   ✕

Connection name

Subscription   ( )

Subscriptions listed are from Azure Cloud

A new Azure Service Principal will be created and assigned with "Contributor" role, having access to all the resources in the selected subscription.

If your subscription is not listed above, or your account is not backed by Azure Active Directory or to specify an existing Service Principal, use the full version of the endpoint dialog.

OK   Close

Azure SQL Database

SQL DB Details ∧

Azure SQL Server Name * ⓘ

░░░░░.database.windows.net

Database Name * ⓘ

AdventureWorksLTdev

Server Admin Login ⓘ

sqlAdmin

Password ⓘ

$(Sqlpassword)

Azure SQL Database

Deployment Package ∧

Type

SQL DACPAC File

DACPAC File * ⓘ

$(System.DefaultWorkingDirectory)/Azure-
AdventureWorksLT/drop/src/Azure-
AdventureWorksLT/AdventureWorksLTdb/bin/Release/AdventureWorksLTdb.
dacpac

Publish Profile ⓘ

Additional SqlPackage.exe Arguments ⓘ

A final thought ...

Don't let your **experience**
be an **impediment** to your ability
to **learn** and **grow**.

contact me

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Thank you!