
POWERSHELL JUMPSTART FOR SQL SERVER DBAS



Microsoft®
SQL Server®

www.mikefal.net

Microsoft
CERTIFIED
Solutions Expert

Data Platform



@Mike_Fal

Mike Fal - www.mikefal.net

Ground Rules



Don't focus on the code, focus on the concepts.

Ask questions!

Get-Agenda

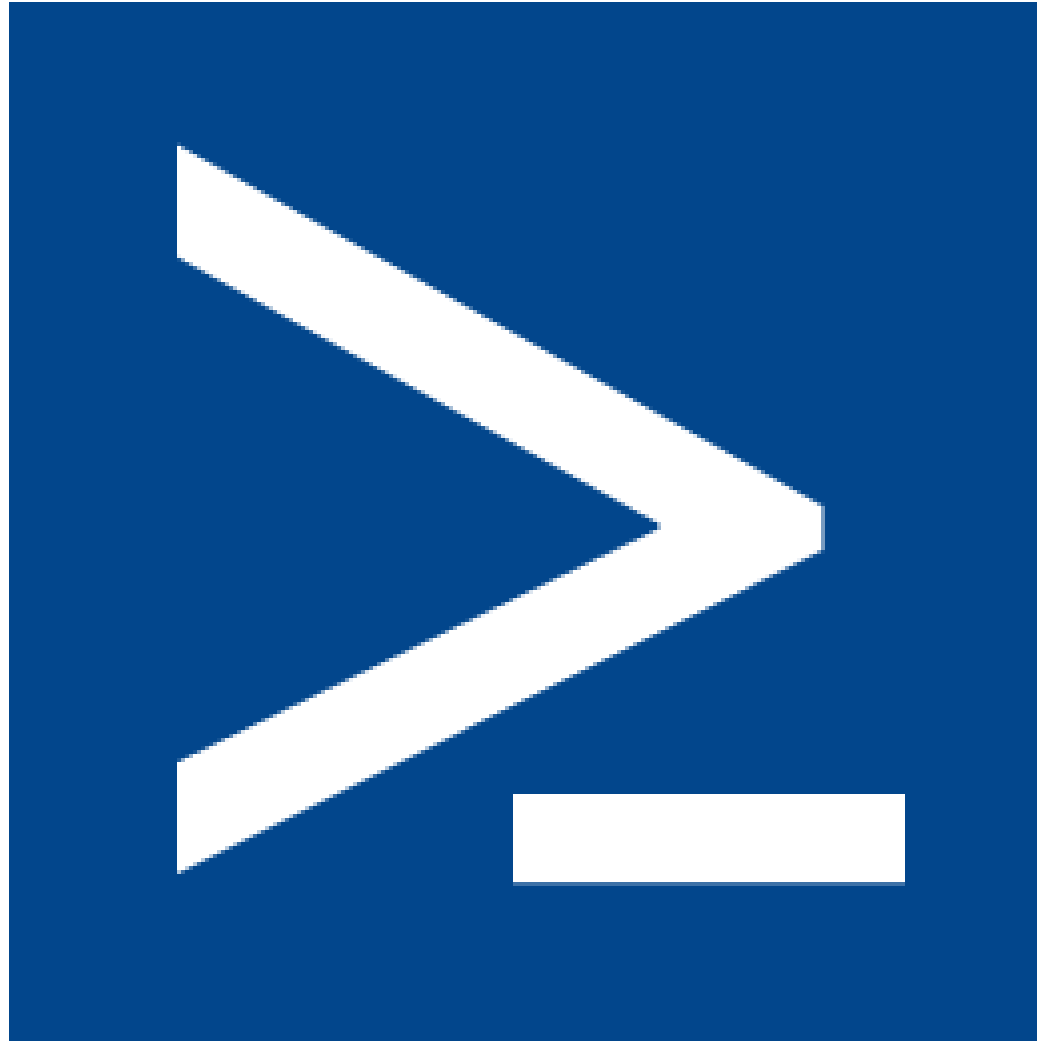
The What and Why of Powershell

Language Basics

Working with SQL Server

And Then What?

What is Powershell?



The Facts

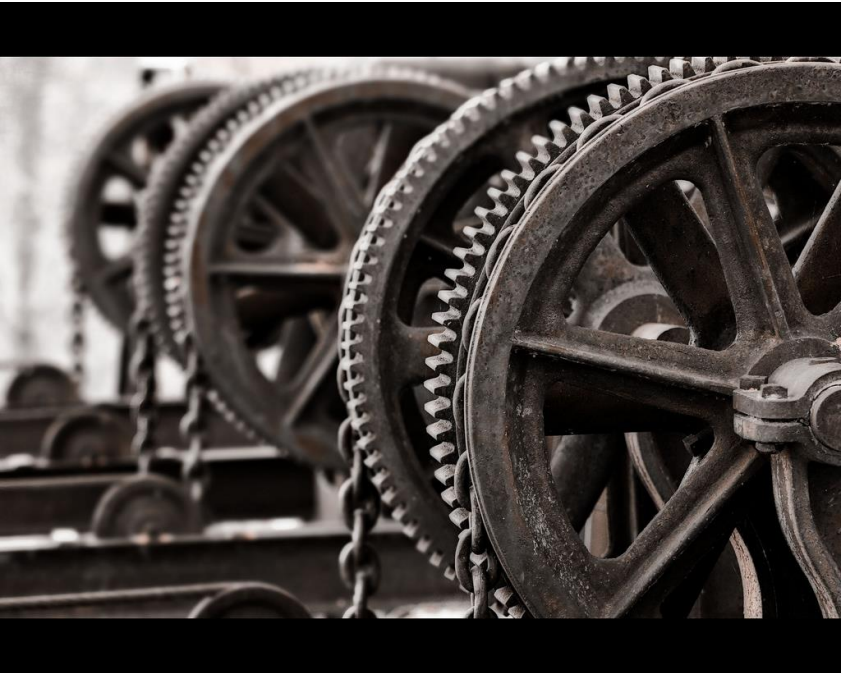
Released as Powershell RC 1 – April 2006

Originally called Project “Monad”

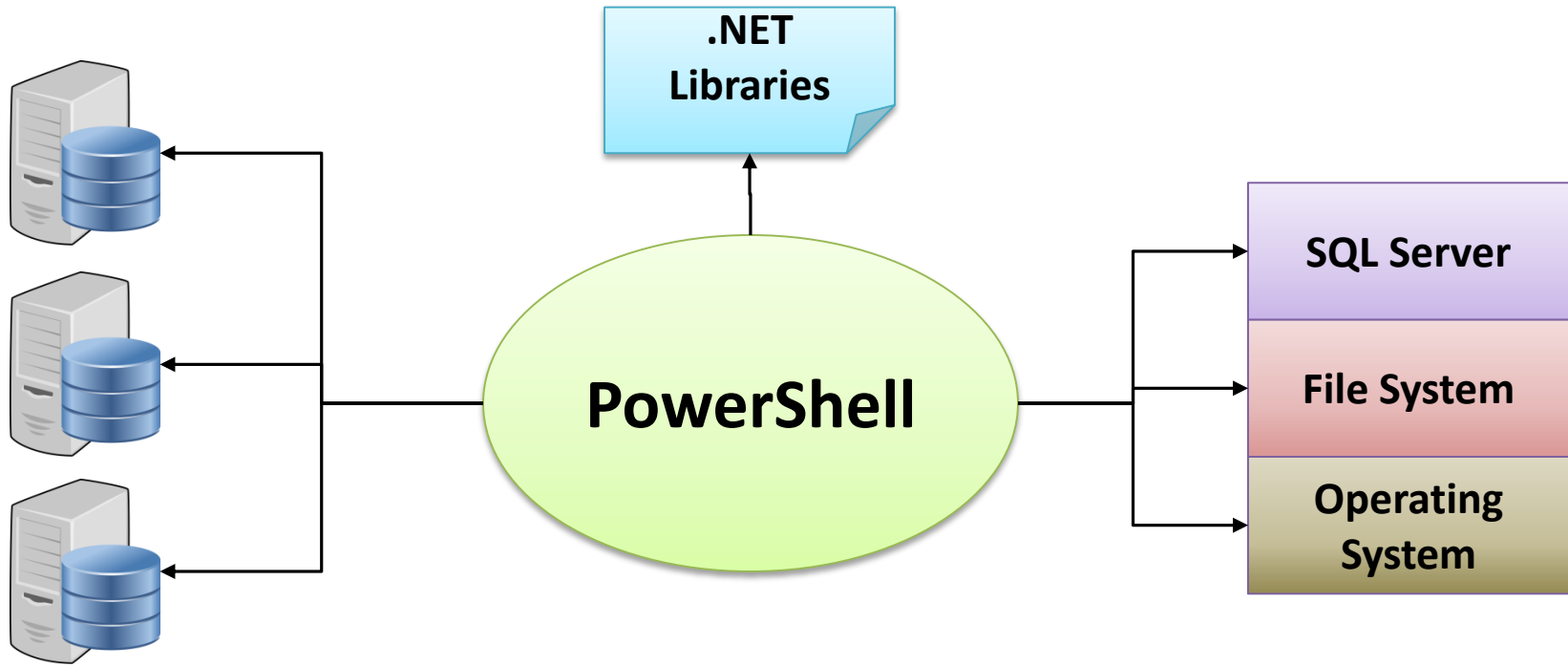
Current available version: 4.0

(5.0 preview available)

But for what?



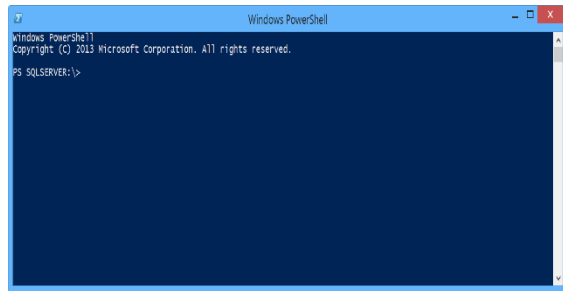
Why PowerShell?



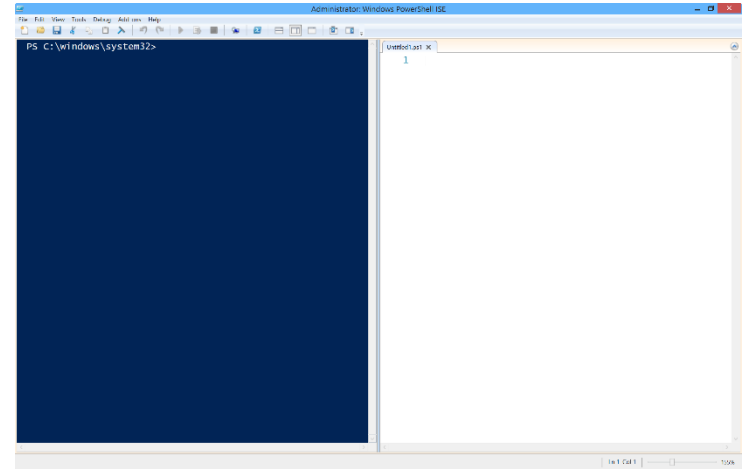
```
Invoke-SqlCmd -ServerInstance $srvr -Query "BACKUP  
DATABASE $db TO DISK=`'$backuplocation`'"
```


Pieces and Parts

Hosts



Powershell.exe

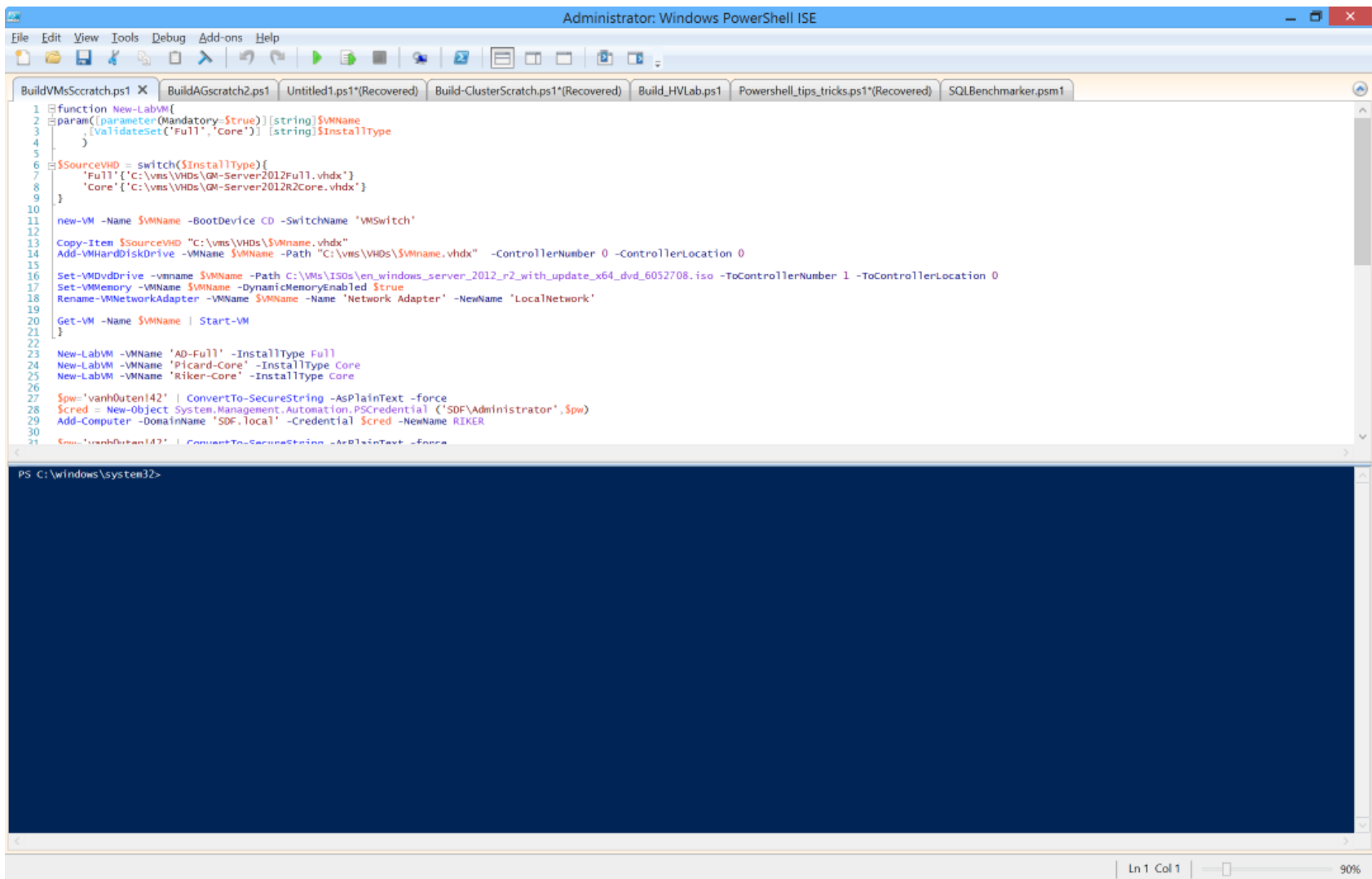


Powershell ISE



System.Management.Automation

Demo – The ISE



The screenshot shows the Windows PowerShell ISE interface. The title bar reads "Administrator: Windows PowerShell ISE". The menu bar includes "File", "Edit", "View", "Tools", "Debug", "Add-ons", and "Help". The toolbar contains various icons for file operations and execution. The script editor shows a PowerShell script with the following content:

```
1 function New-LabVM{
2 param([parameter(Mandatory=$true)][string]$VMName
3       ,[ValidateSet('Full','Core')] [string]$InstallType
4       )
5
6 $SourceVHD = switch($InstallType){
7   'Full' {'C:\vms\VHDS\QM-Server2012Full.vhdx'}
8   'Core' {'C:\vms\VHDS\QM-Server2012R2Core.vhdx'}
9 }
10
11 new-VM -Name $VMName -BootDevice CD -SwitchName 'VMSwitch'
12
13 Copy-Item $SourceVHD "C:\vms\VHDS\$VMName.vhdx"
14 Add-VMHardDiskDrive -VMName $VMName -Path "C:\vms\VHDS\$VMName.vhdx" -ControllerNumber 0 -ControllerLocation 0
15
16 Set-VMdvdDrive -vmname $VMName -Path C:\vms\ISOs\en_windows_server_2012_r2_with_update_x64_dvd_6052708.iso -ToControllerNumber 1 -ToControllerLocation 0
17 Set-VMemory -VMName $VMName -DynamicMemoryEnabled $true
18 Rename-VMNetworkAdapter -VMName $VMName -Name 'Network Adapter' -NewName 'LocalNetwork'
19
20 Get-VM -Name $VMName | Start-VM
21 }
22
23 New-LabVM -VMName 'AD-Full' -InstallType Full
24 New-LabVM -VMName 'Picard-Core' -InstallType Core
25 New-LabVM -VMName 'Riker-Core' -InstallType Core
26
27 $pw='vanh0uten142' | ConvertTo-SecureString -AsPlainText -force
28 $cred = New-Object System.Management.Automation.PSCredential ('SDF\Administrator',$pw)
29 Add-Computer -DomainName 'SDF.local' -Credential $cred -NewName RIKER
30
31 $pw='vanh0uten142' | ConvertTo-SecureString -AsPlainText -force
```

The console window at the bottom shows the prompt "PS C:\windows\system32>" and is currently empty.

At the bottom right of the ISE window, the status bar displays "Ln 1 Col 1" and "90%".

cmdlets

Fundamental unit of “getting stuff done”

- Get-Help
- New-Item
- Remove-Module

Verb-Noun

Limited by Microsoft

Unlimited values,
Should be descriptive

Learn Within Powershell

Get-Command

List Commands:
New
-Module SQLPS

Get-Help

Show help info:
man, help
-ShowWindow

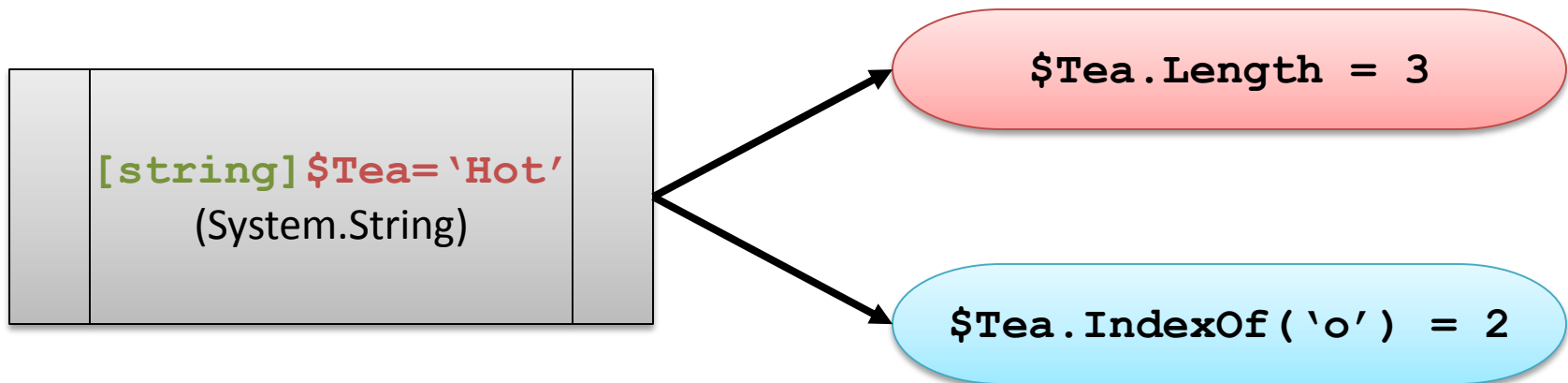
Get-Member

Methods and properties:

Object Oriented Thinking

Everything is a .Net object!

- Properties (attributes)
- Methods (functions, do things)



Variables

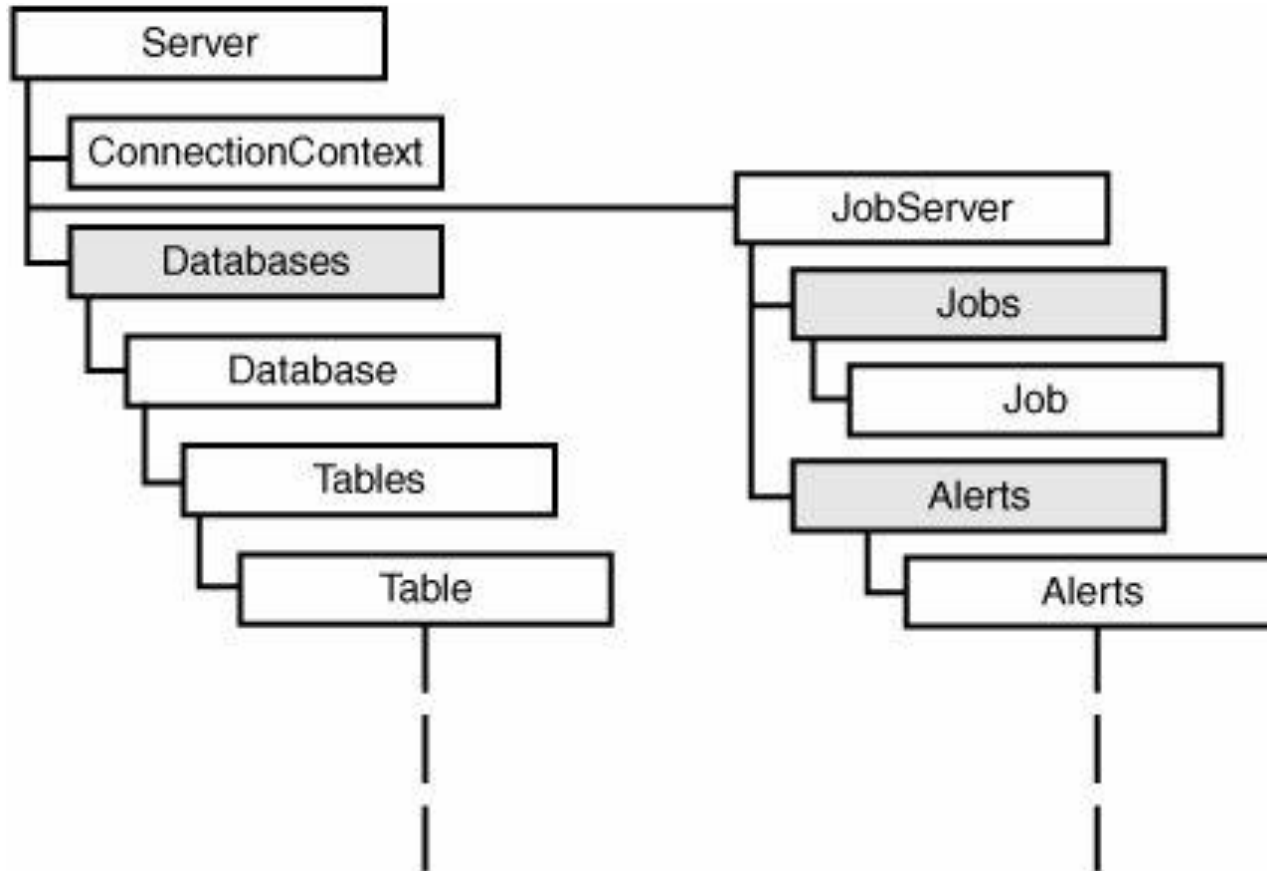
'\$' indicates a variable

```
[string]$Tea = 'Hot'
```

```
$Tea = 'Hot'
```

```
$TeaTime = Get-Date
```

Demo – CMDLETS and Objects



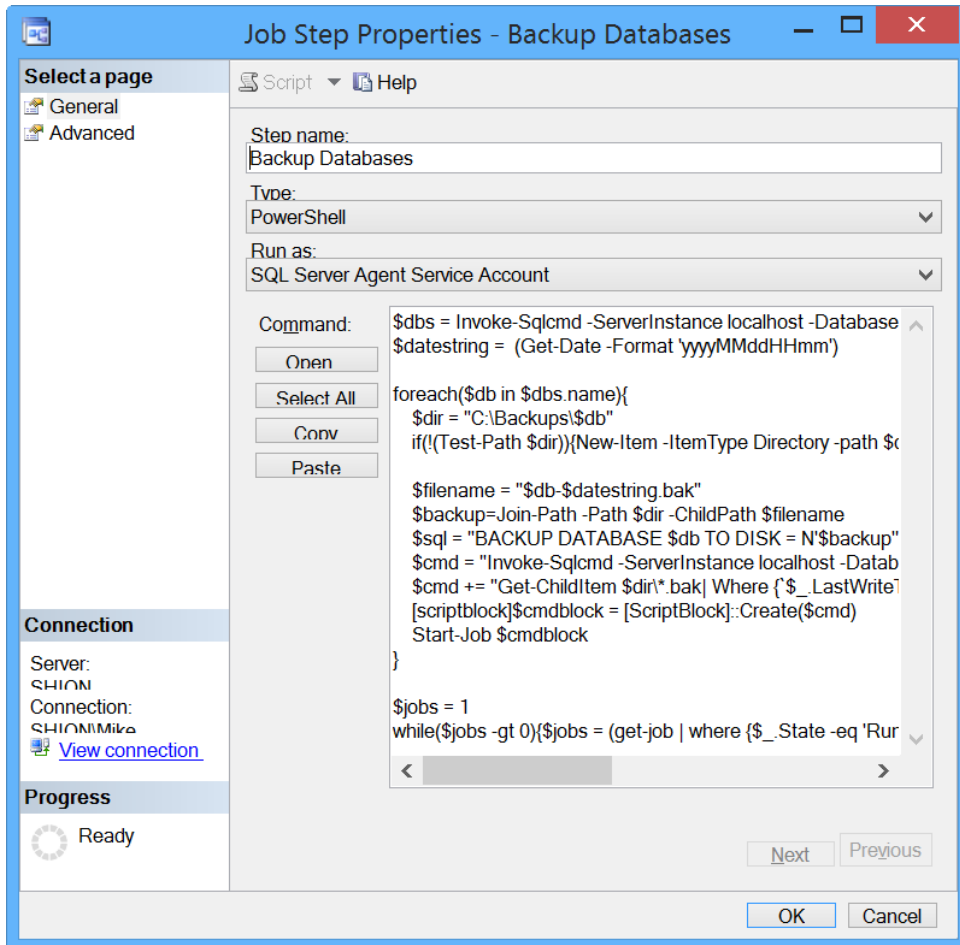
The SQL Server Module



Import-Module SQLPS (SQL 2012+ client)

SQL Server cmdlets **SQL Server Provider**

Agent Jobs



SQL 2008+

Job step type

Execute as 'Run as'

Demo – Working with SQL Server

```
PS SQLSERVER:\> Get-Command -Module SQLPS
```

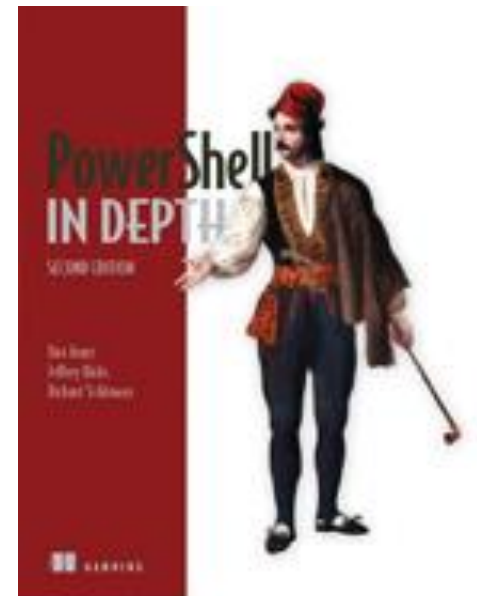
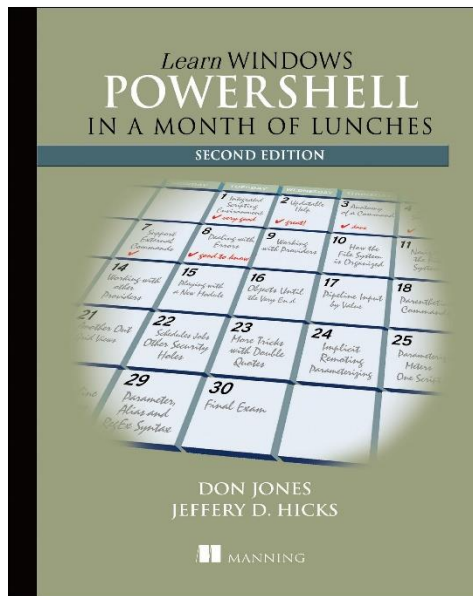
CommandType	Name	ModuleName
Function	SQLSERVER:	SQLPS
Cmdlet	Add-SqlAvailabilityDatabase	SQLPS
Cmdlet	Add-SqlAvailabilityGroupListenerStaticIp	SQLPS
Cmdlet	Add-SqlFirewallRule	SQLPS
Cmdlet	Backup-SqlDatabase	SQLPS
Cmdlet	Convert-UrnToPath	SQLPS
Cmdlet	Decode-SqlName	SQLPS
Cmdlet	Disable-SqlAlwaysOn	SQLPS
Cmdlet	Enable-SqlAlwaysOn	SQLPS
Cmdlet	Encode-SqlName	SQLPS
Cmdlet	Get-SqlCredential	SQLPS
Cmdlet	Get-SqlDatabase	SQLPS
Cmdlet	Get-SqlInstance	SQLPS
Cmdlet	Get-SqlSmartAdmin	SQLPS
Cmdlet	Invoke-PolicyEvaluation	SQLPS
Cmdlet	Invoke-Sqlcmd	SQLPS
Cmdlet	Join-SqlAvailabilityGroup	SQLPS
Cmdlet	New-SqlAvailabilityGroup	SQLPS
Cmdlet	New-SqlAvailabilityGroupListener	SQLPS
Cmdlet	New-SqlAvailabilityReplica	SQLPS
Cmdlet	New-SqlBackupEncryptionOption	SQLPS
Cmdlet	New-SqlCredential	SQLPS
Cmdlet	New-SqlHADREndpoint	SQLPS

So now what?



Books

- [Powershell In A Month of Lunches](#)
- [Powershell in Depth, 2nd Edition](#)



Bloggers

- Ben Miller
(<http://www.dbaduck.com/>)
- Allen White
(http://sqlblog.com/blogs/allen_white/)
- Kendal Van Dyke
(<http://www.kendalvandyke.com/>)
- Laerte Junior
(<https://www.simple-talk.com/author/laerte-junior/>)

Online

[Microsoft Virtual Academy](#)

[PluralSight \(\\$\\$\)](#)



Other scripts

<https://github.com/MikeFal>

- Powershell repository (all my scripts, including WIP)



Most of all, USE IT

Find tasks to automate

Manage the file system **ONLY** through
Powershell

Rewrite a T-SQL or other task using
Powershell

And so on...

Questions

HUH?

mike@mikefal.net

www.mikefal.net

@Mike_Fal