

# Azure PowerShell Deep Dive: A PowerShell Refresher

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# What is PowerShell?

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- An interactive console-based management tool
- An easy to learn, interpretive scripting language
- Originally intended to manage Microsoft servers and platforms



# Management Engine

- The PowerShell engine is ***hosted*** in an application
  - It can run in the CMD.EXE console shell
  - It can run as a GUI in the PowerShell ISE or VSCode
  - 3<sup>rd</sup> party apps can host PowerShell
  - Cloud Shell is a modern implementation
- Need a GUI? Build it on top of PowerShell
  - Windows Forms
  - WPF

# Why PowerShell?

- *The* Microsoft management standard
  - Supported by many major vendors as well like VMware, Citrix and Amazon
- Documented and consistent IT processes
  - If you can type it you can script it
  - Do it for 1, 10 or 1000
- Manage everything with PowerShell even non-Windows
- Learn it once, apply it everywhere
- Efficiency at scale





# The PowerShell Paradigm

- “Objects in the pipeline”
- Learn to think like PowerShell
- Don't force PowerShell to fit your pre-conceptions



# PowerShell Principals

- Objects in a pipeline
  - .NET
  - COM
  - Define your own
- Objects can change in the pipeline
- At the end of the pipeline PowerShell displays whatever remains

Get-Process | Sort-Object –property WS -descending | Select-Object –first 10

Get all processes as  
.NET objects

Pass them to a command to  
sort on the working set  
property in descending  
order

Hand them off to a  
command that  
selects only the first  
10 objects

```
Administrator: Windows PowerShell 5.1.17763
PS C:\> get-process | sort-object -Property WS -Descending | Select-Object -first 10
```

Handles	NPM(K)	PM(K)	WS(K)	CPU(s)	Id	SI	ProcessName
-----	-----	-----	-----	-----	--	--	-----
0	0	3084	1204092	208.19	3284	0	Memory Compression
4493	281	505924	599060	623.89	16660	1	POWERPNT
1329	76	1621628	570060	2,977.66	1504	1	dwm
611	99	407164	416592	182.30	21440	1	brave
0	2843	1050692	361296	5.02	12948	0	vmmem
504	68	296128	281196	6,446.03	12360	1	brave
1259	115	375968	276820	477.58	19192	1	thunderbird
977	47	236880	258532	1,771.66	2684	0	ekrn
2731	94	201140	232964	4,566.11	17340	1	brave
858	71	447556	230092	1,409.86	17816	1	brave

```
PS C:\>
```

PowerShell displays formatted results



# PowerShell Principals

- **Cmdlets** are single purpose tools designed to work with objects
  - Verb-Noun naming convention
  - Consistent parameter convention
  - Well-documented

# PowerShell Principals

- No difference between an interactive set of commands and a script
  - Type it once
  - Create your own tools with advanced functions
  - Test your code with Pester
  - Package them into a module

# Terminology

## Variable

- “Hold my beer”
- \$beer

## Alias

- “B is for beer”
- Transitions and short-cuts

## Snapins and Modules

- “How do I get my beer?”

## Function

- “I want to brew my own beer”



# PowerShell Myths

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- PowerShell is hard to learn
- PowerShell is all about scripting
- PowerShell is all command line
- PowerShell is not as good as <fill in the blank>
- PowerShell requires Windows



# PowerShell for All

## Windows PowerShell

- Windows only
  - Powershell.exe
- Full .NET Framework
- Proprietary
- Maintenance mode
  - Version 5.1

## PowerShell Core

- Linux, MacOS, Windows
  - pwsh.exe
- .NET Core
- Open Source
- Active Development
  - 6 month release cycle

PowerShell Core can run side by side with Windows PowerShell



A blue robot with a white chest and a red visor is holding a tablet. The tablet displays a blue square with a white PowerShell logo. The background is a solid yellow color.

# The PowerShell Answer


“Manage everything from anywhere using whatever desktop you want.”



# PowerShell is Microsoft's Cloud Language

- Designed to manage on-premises and cloud-based resources
  - WSMAN
  - SSH
  - COM/DCOM
- Can consume web based content
  - REST
  - JSON
  - XML
- Managing at Scale





# PowerShell is NOT the only tool you need

- Python
- JSON and YAML
- Docker
- Kubernetes
- Hyper-V or VMware

Desired State Configuration

Just Enough Administration

# PowerShell is the “glue”

Release Pipelines

Azure Automation

PowerShell Workflow

Pester and automated testing



# PowerShell Tools

## PowerShell ISE

- Ships with Windows 10
- In maintenance mode
- PowerShell only
- Is extensible

## Visual Studio Code

- Freely available cross-platform
- Monthly releases
- Multiple languages
- Growing gallery of extensions
- Git and GitHub integration
- <https://code.visualstudio.com/>



# A PowerShell Practice Plan

- Start with the console
- Learn how to use and read help
- Teach yourself to think in PowerShell
- Start with simple PowerShell scripts
- Step up to advanced functions
- Package your functions into modules



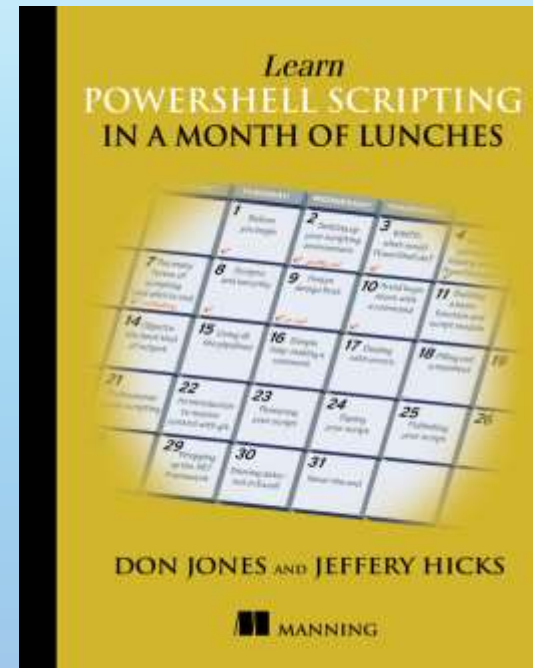
You have to use PowerShell every  
day.



# Resources

Learn Windows PowerShell in a Month of Lunches

Learn PowerShell Scripting in a Month of Lunches

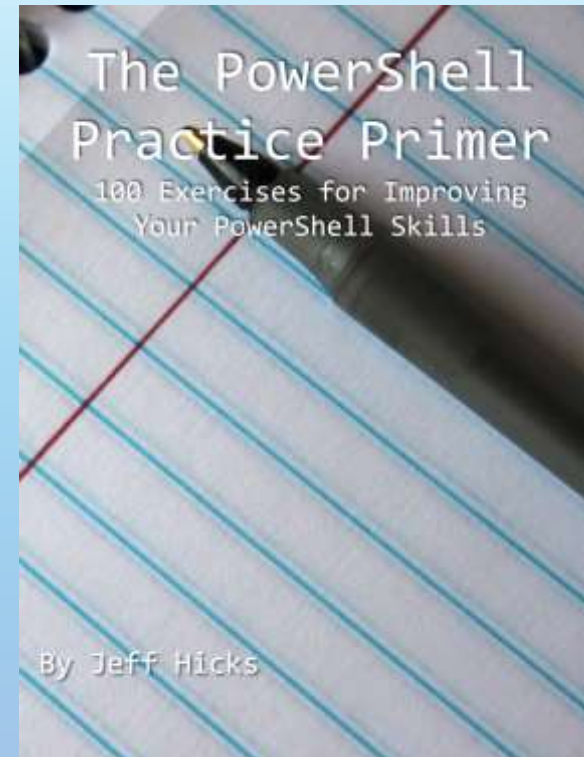


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The PowerShell Practice Primer  
(<https://leanpub.com/psprimer>)



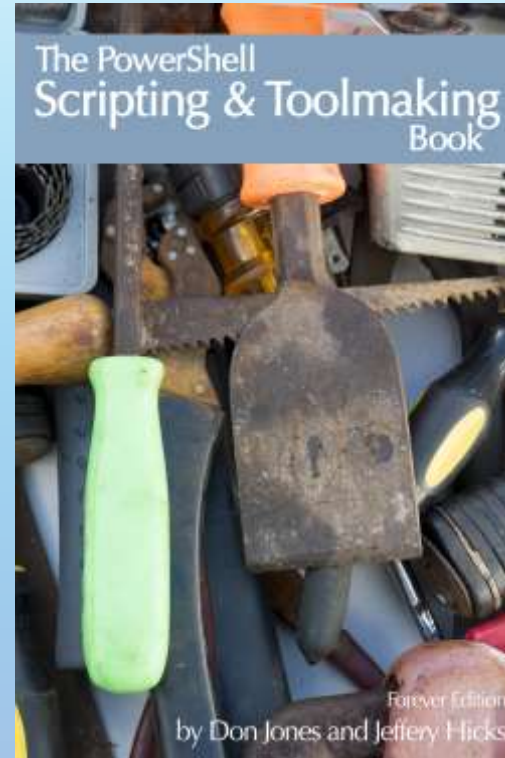
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The PowerShell Practice Primer  
(<https://leanpub.com/psprimer>)

The PowerShell Scripting & Toolmaking Book  
(<https://leanpub.com/powershell-scripting-toolmaking/>)



## Resources Online

- [#PowerShell](#)
- [#PSTweetChat](#)
- [MCPMag.com](#)
- [Petri.com](#)
- [Microsoft.com/powershell](#)
- [PowerShell.org](#)
- [Pluralsight.com](#)



Questions?



Hold my bottle...I got this