PowerShell & PowerCLI Starting from Scratch

TORONTO VMUG USERCON

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Meet Mike

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mikenelson-io

- 35+ years in tech
- Experience from Helpdesk to Architect
- Scripter, not a coder
- Passion for community, teaching, learning
- Midwest USA husband & dad
- Beer, BBQ, & Gadgets

Microsoft® MVP Most Valuable Professional

Citrix Technology Advocate CTA

vmware vEXPERT

PURE CODE( )

Get-Content

- PowerShell Basics
- PowerCLI
- Demos

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PowerShell (PoSH)

Started as a scripting framework for automation &evolved into a command line interface (CLI) and a scripting language

Native executables, cmdlets, scripts, functions, aliases, modules, help, profiles, parameters, and more

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Get-History

- Jeffrey Snover, Bruce Payette, & James Truher
- Project Monad in 2002
- The "Monad Manifesto"

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{* OFFBEAT *}

Jeffrey Snover claims Microsoft demoted him for inventing PowerShell

Twitter thread reveals Redmondian machinations

Get-SnoverQuips

"This is rock science, not rocket science."

"PowerShell is a such a great product because I am a deeply flawed human being."

"When in trouble, fear, or doubt - run in circles, scream, and shout."

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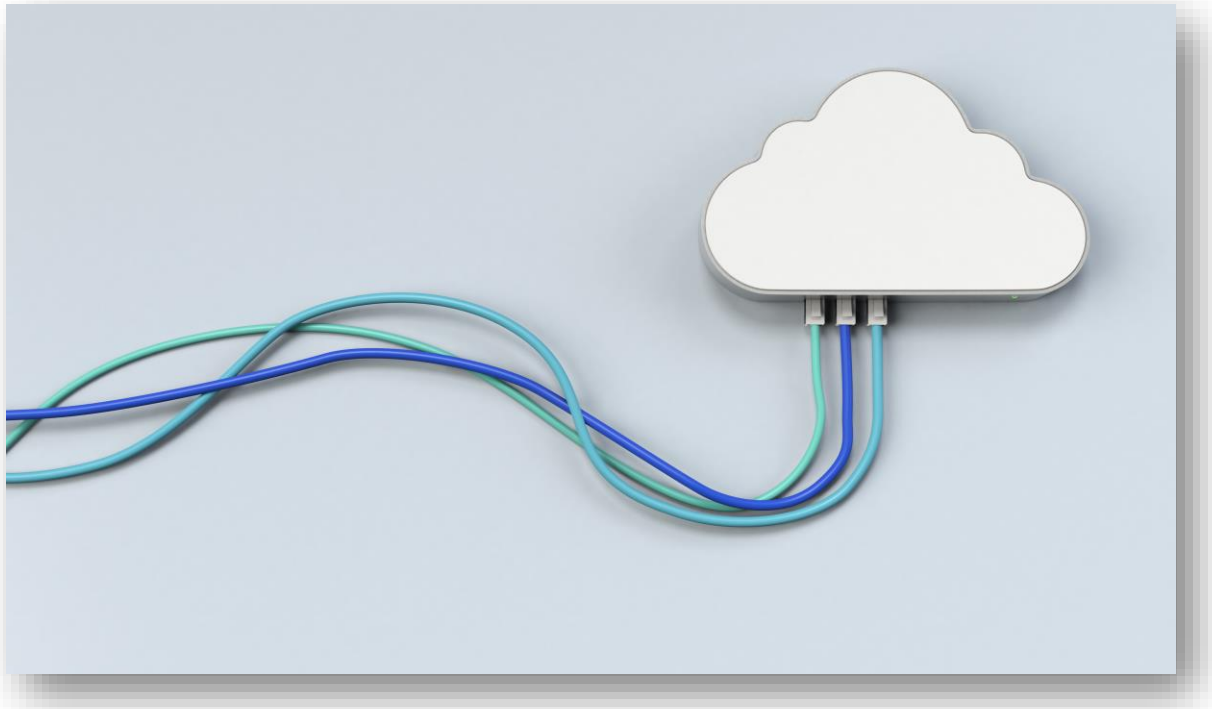
Start-Install

- Pre-installed
- Microsoft Store
- PowerShell GitHub Repository
- Windows Update (7.2.1+)
- Chocolatey
- Snap



Get-Versions

.Net Framework

<=5.1

Windows Server
Windows Client

6.x

.NET Core

7.x

Windows Client
Windows Server
Linux
MacOS

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Cmdlets

“commandlets”

- A type of command in PowerShell
- Common syntax & options
- Usually take object input & return objects
- Created as .NET class objects
- Repeatable and auditable
- Stored in .ps1 file for scripts

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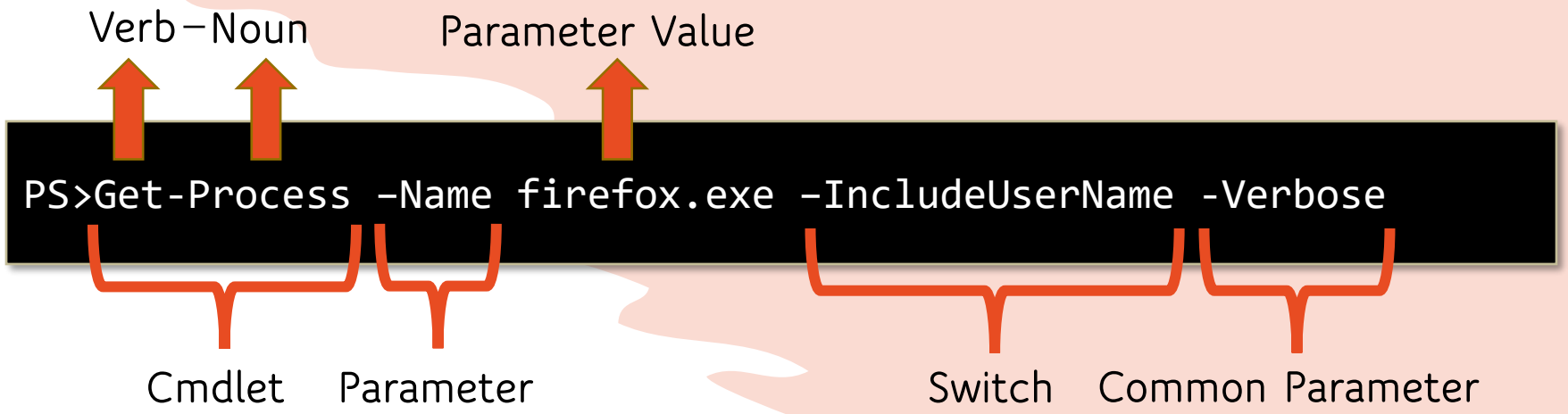
Get-Syntax


Verb–Noun
Parameter Value
PS>Get-Process -Name firefox.exe -IncludeUserName -Verbose
Cmdlet
Parameter
Switch
Common Parameter

Parameters

Named

Positional

Dynamic

Common

Sets

- Allow for users to provide input or options
- Used by cmdlets, functions, and scripts
- They do not have to be named
- Hyphen “-” signals PoSH to a parameter
- Some parameters do not accept or require a value
- Parameter Sets

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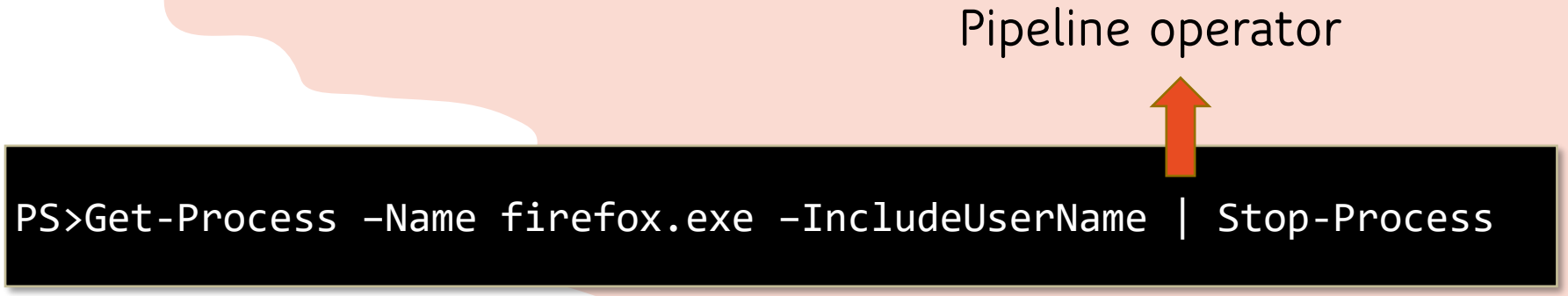
Pipelining



Object returned by first cmdlet sent to second cmdlet

"One-liner"

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Functions

- A list of PowerShell statements that run like you had entered them on the command line
- Like other programming language functions
- Can have parameters like cmdlets
- Can also act like cmdlets
- Can be simple to complex

```
function Get-FirefoxProcess { Get-Process firefox.exe }
function Get-FirefoxProcess {
  $a = Get-Process firefox.exe
    if ($a -eq $null) {
      Write-Host “No Firefox process present”}
    return $a
}
```

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Modules

- .psm1 file
  - Imported as itself or launched from .psd1 file (a module manifest file)
  - Commands, providers, variables, functions, help context, aliases, workflows
- Auto-Loading capability
- Stored in $env:PSModulePath
- Easy lifecycle management with PowerShell Gallery (Install-Module & Update-Module)

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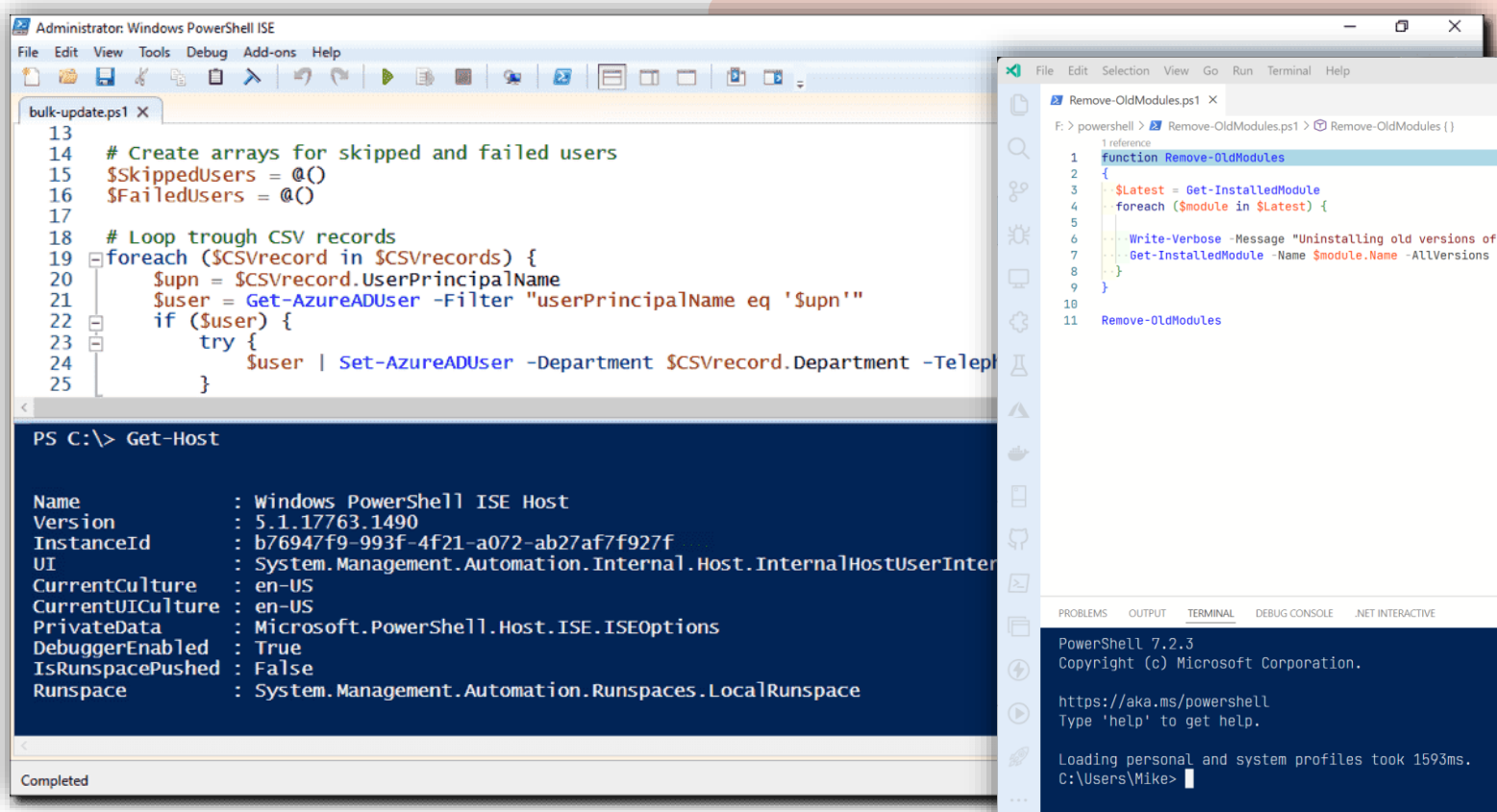
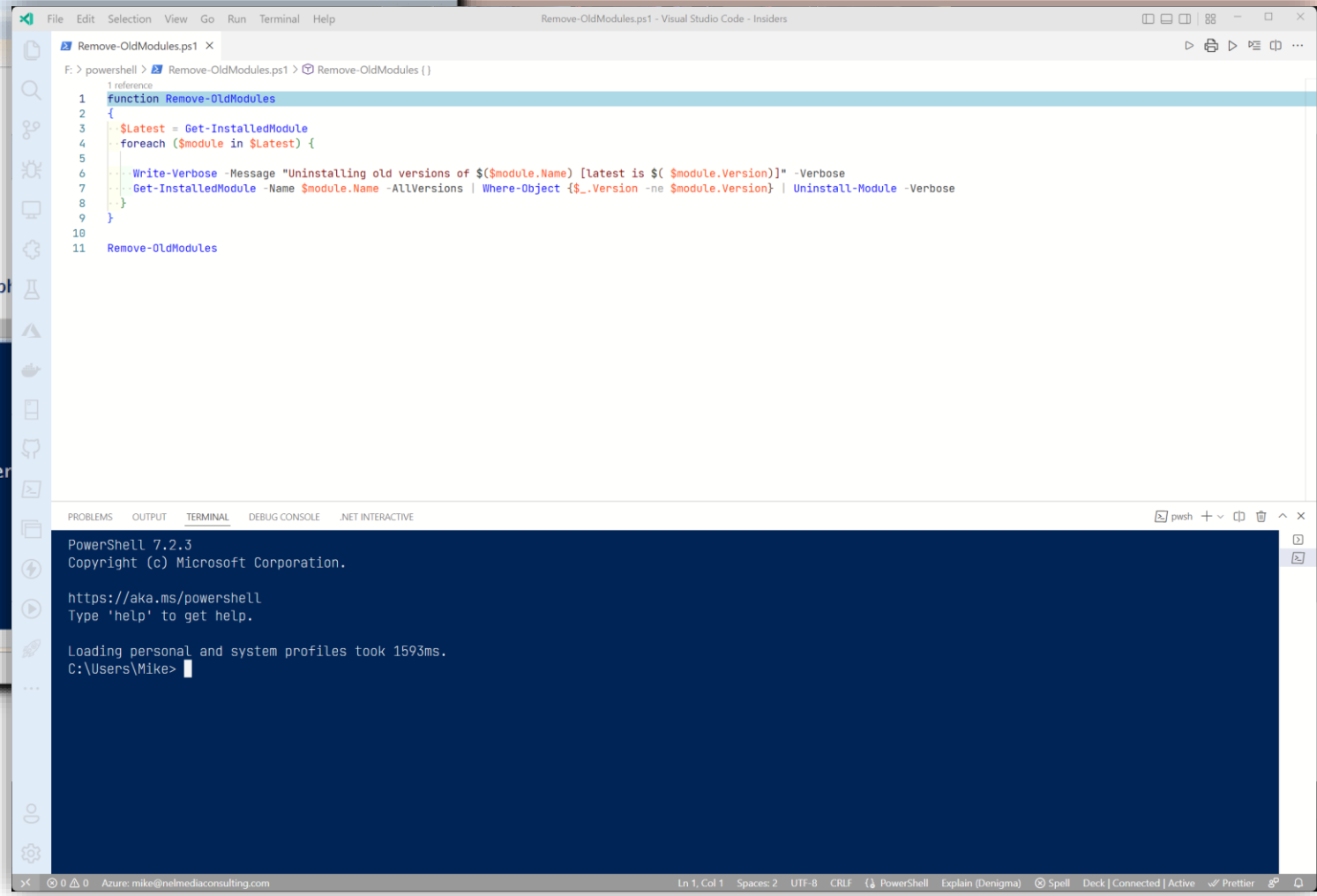
Creating / Editing / Running





6 Core Commands to Know

Get-Command

Get-Help

Update-Help

Update-Module

Get-Member

Show-Command

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PowerCLI

- Install-Module VMware.PowerCLI
  - -Allow-Clobber, -Force & -SkipPublisherCheck may be necessary

```
Install-Package: The following commands are already available on this
system:'Export-VM,Get-VM,Get-VMHost,Move-VM,New-VM,Remove-VM,Restart-VM,Set-VM,Set-VMHost,Start-VM,Stop-VM,Suspend-VM'. This module
'VMware.VimAutomation.Core' may override the existing commands. If you still want to install this module 'VMware.VimAutomation.Core', use
-AllowClobber parameter.
```

- If certificate error, Update-Module will not work
- Cmdlet collisions such as Get-VM
- 800+ cmdlets in 15+ modules
- Set-PowerCLIConfiguration creates PowerCLI_Settings.xml file
  - For Connect-VIServer certificate errors, use -InvalidCertificateAction Ignore

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```
# Modules that must be imported into the global environment prior to importing this module
RequiredModules = @(
@{"ModuleName"="VMware.VimAutomation.Sdk";"ModuleVersion"="12.5.0.19093564"}
@{"ModuleName"="VMware.VimAutomation.Common";"ModuleVersion"="12.6.0.19600917"}
@{"ModuleName"="VMware.Vim";"ModuleVersion"="7.0.3.19601056"}
@{"ModuleName"="VMware.VimAutomation.Core";"ModuleVersion"="12.6.0.19601570"}
@{"ModuleName"="VMware.VimAutomation.Srm";"ModuleVersion"="12.6.0.19609133"}
@{"ModuleName"="VMware.VimAutomation.License";"ModuleVersion"="12.0.0.15939670"}
@{"ModuleName"="VMware.VimAutomation.Vds";"ModuleVersion"="12.5.0.19167830"}
@{"ModuleName"="VMware.CloudServices";"ModuleVersion"="12.6.0.19606210"}
@{"ModuleName"="VMware.VimAutomation.Vmc";"ModuleVersion"="12.6.0.19609014"}
@{"ModuleName"="VMware.VimAutomation.Nsxt";"ModuleVersion"="12.5.0.19168180"}
@{"ModuleName"="VMware.VimAutomation.vROps";"ModuleVersion"="12.5.0.19167825"}
@{"ModuleName"="VMware.VimAutomation.Cis.Core";"ModuleVersion"="12.6.0.19601368"}
@{"ModuleName"="VMware.VimAutomation.HorizonView";"ModuleVersion"="12.5.0.19033914"}
@{"ModuleName"="VMware.VimAutomation.Cloud";"ModuleVersion"="12.0.0.15940183"}
@{"ModuleName"="VMware.DeployAutomation";"ModuleVersion"="7.0.3.19599828"}
@{"ModuleName"="VMware.ImageBuilder";"ModuleVersion"="7.0.3.19599828"}
@{"ModuleName"="VMware.VimAutomation.Storage";"ModuleVersion"="12.6.0.19609013"}
@{"ModuleName"="VMware.VimAutomation.StorageUtility";"ModuleVersion"="1.6.0.0"}
@{"ModuleName"="VMware.VumAutomation";"ModuleVersion"="12.1.0.16941488"}
@{"ModuleName"="VMware.VimAutomation.Security";"ModuleVersion"="12.3.0.17833870"}
@{"ModuleName"="VMware.VimAutomation.Hcx";"ModuleVersion"="12.6.0.19606303"}
@{"ModuleName"="VMware.VimAutomation.WorkloadManagement";"ModuleVersion"="12.4.0.18627055"}
@{"ModuleName"="VMware.Sdk.Runtime";"ModuleVersion"="1.0.106.18628394"}
@{"ModuleName"="VMware.Sdk.vSphere";"ModuleVersion"="1.0.104.18678708"}
@{"ModuleName"="VMware.PowerCLI.VCenter";"ModuleVersion"="12.6.0.19600125"}
@{"ModuleName"="VMware.Sdk.Nsx.Policy";"ModuleVersion"="3.2.0.19610335"}
)
```

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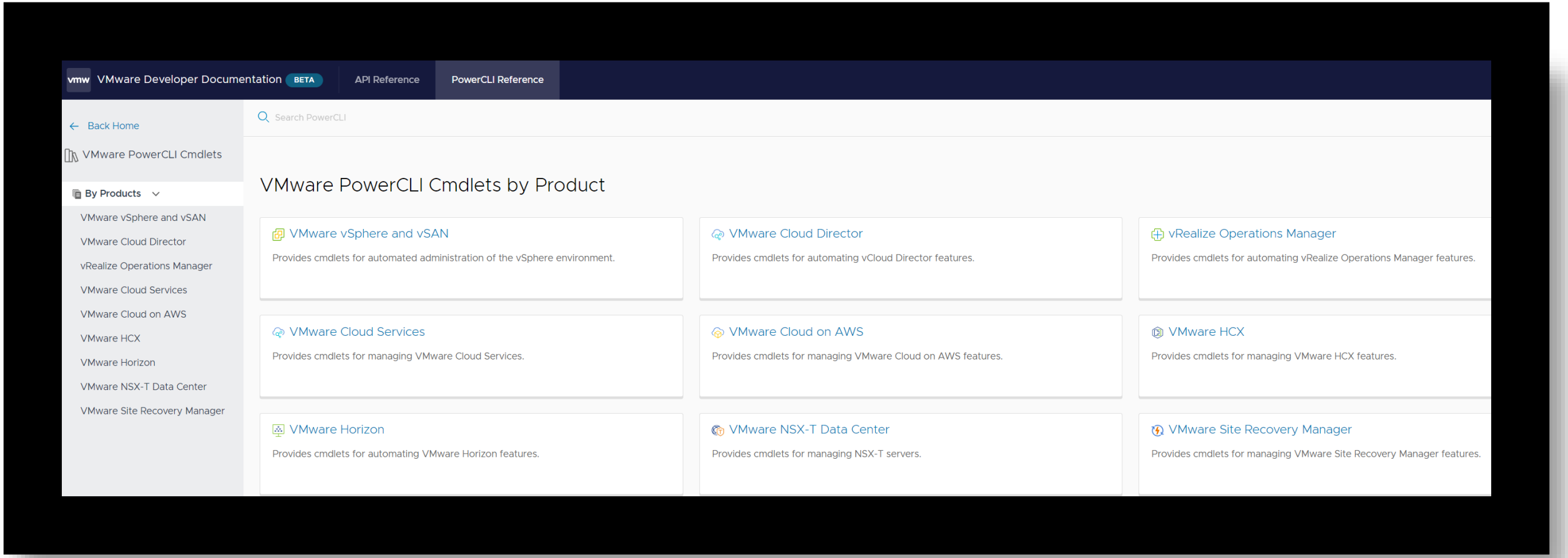
https://developer.vmware.com/docs/powercli/latest/products/



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Demos

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Thank you!

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