@MyWebUniversity

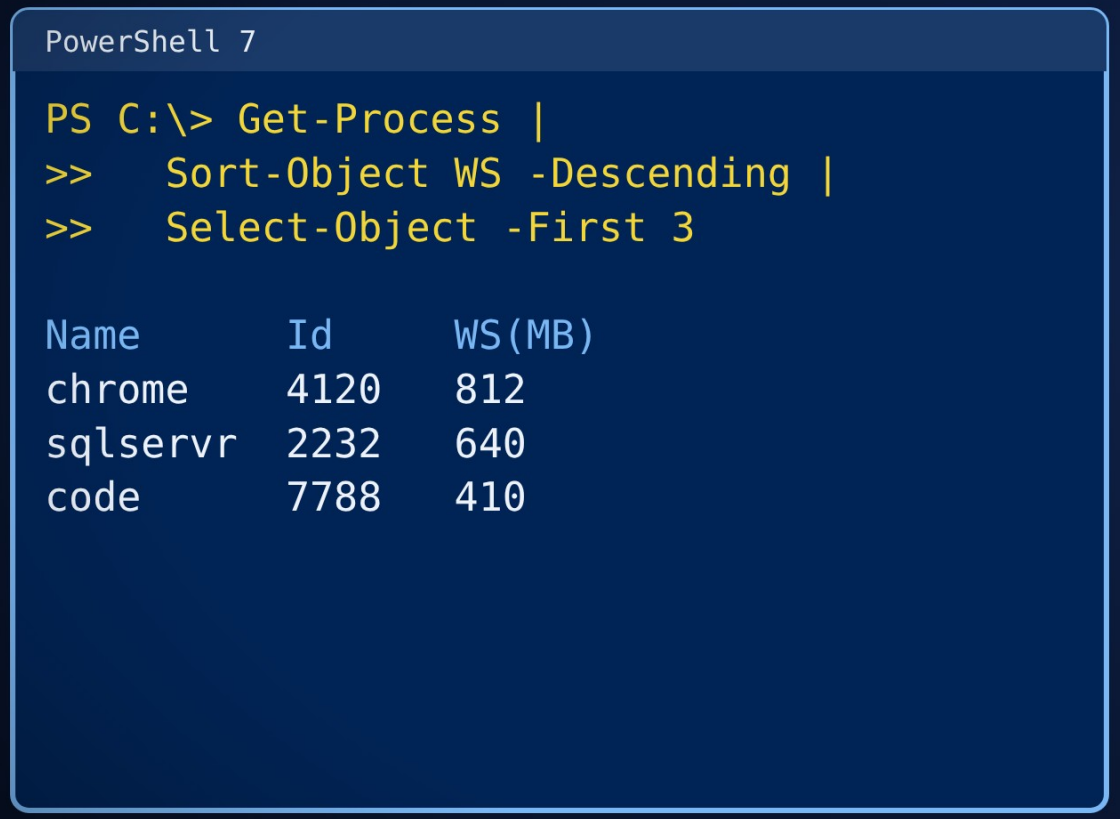
PowerShell

The Shell That Speaks in Objects

```
PowerShell
PS> Get-Process
PS> Get-Service
PS> Get-Help
PS> _
```

```
Get-Process | Sort-Object
```

WINDOWS · LINUX · macOS

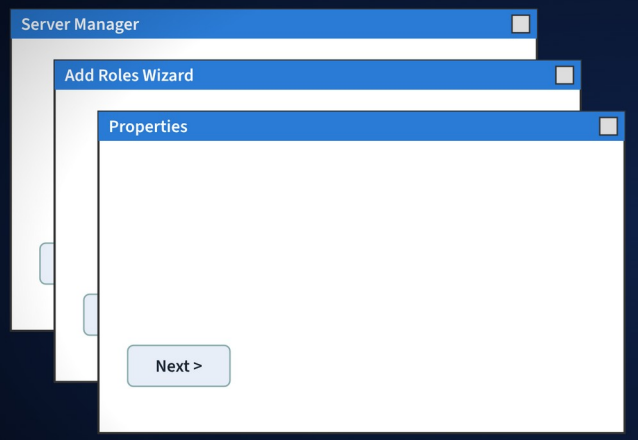


A MYWEBUNIVERSITY STORY

PS>_ PowerShell

The Shell That Speaks in Objects

Windows Was Hard to Automate



click · click · click … on every server

```
C:\> copy *.log D:\backup
C:\> for %f in (*.txt) do …
' VBScript …
```

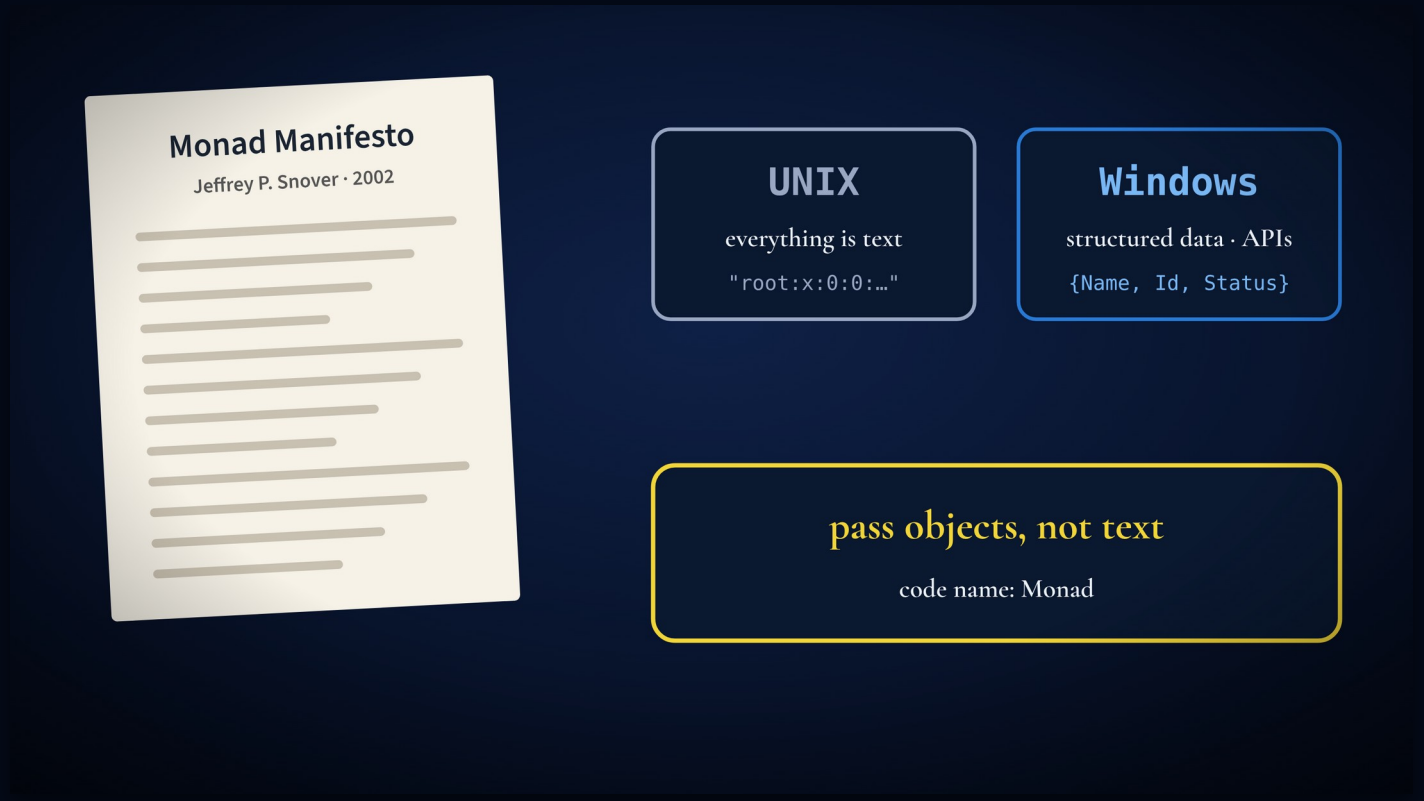
cmd.exe · batch files · VBScript

hard to manage hundreds of servers

- UNIX admins scripted everything
- Windows admins clicked through wizards
- cmd.exe, batch files and VBScript were not enough

01

The Monad Manifesto, 2002



- 2002: Jeffrey Snover's "Monad Manifesto"
- UNIX = text · Windows = structured data and APIs
- Idea: pass objects, not text

02

Windows PowerShell 1.0, 2006



- Nov 2006: Windows PowerShell 1.0
- Cmdlets: Verb-Noun (Get-Process, Stop-Service)
- Get-Help · Get-Command: discoverable

03

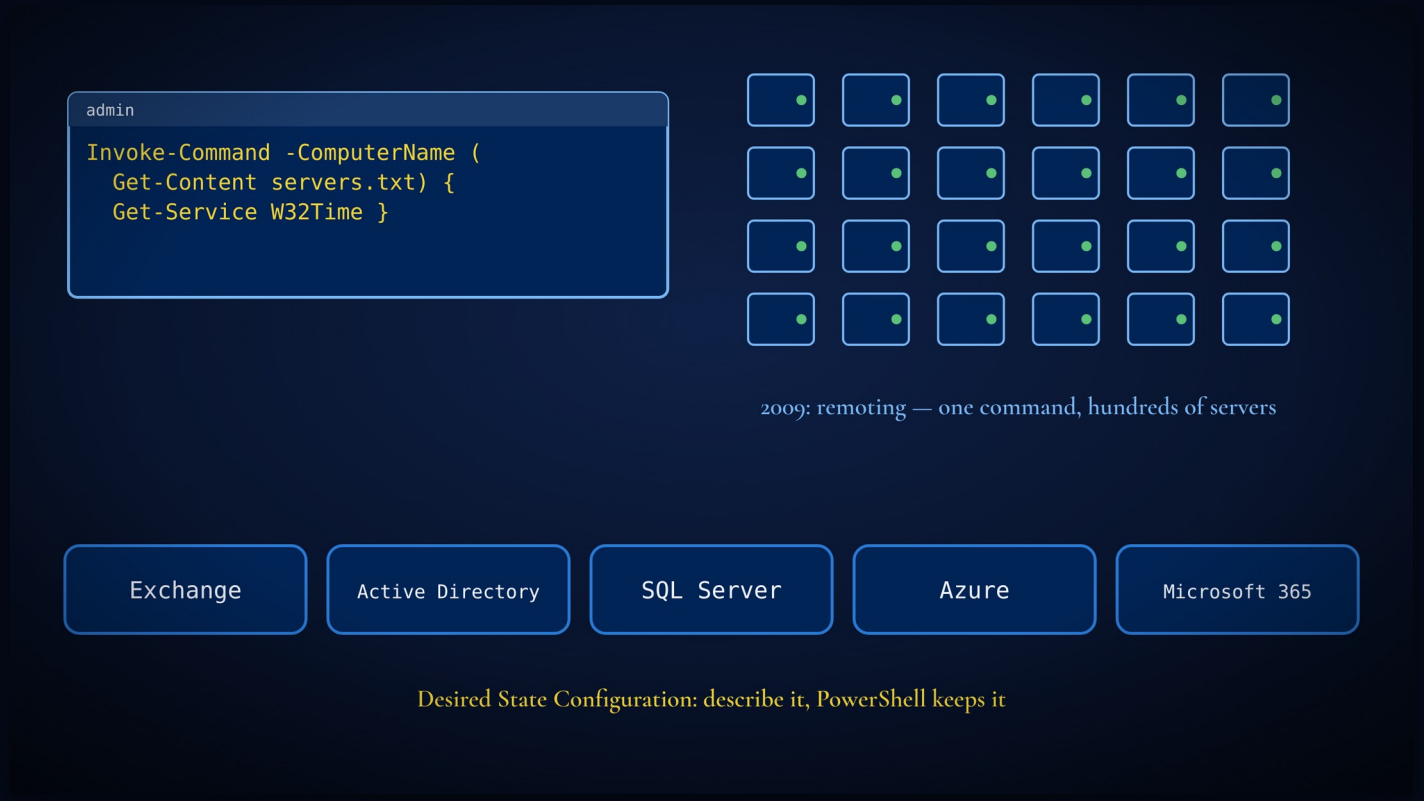
The Object Pipeline



- Get-Process | Sort-Object WS -Descending | Select-Object -First 5
- Properties instead of text columns
- Export-Csv · ConvertTo-Json · ConvertTo-Html

04

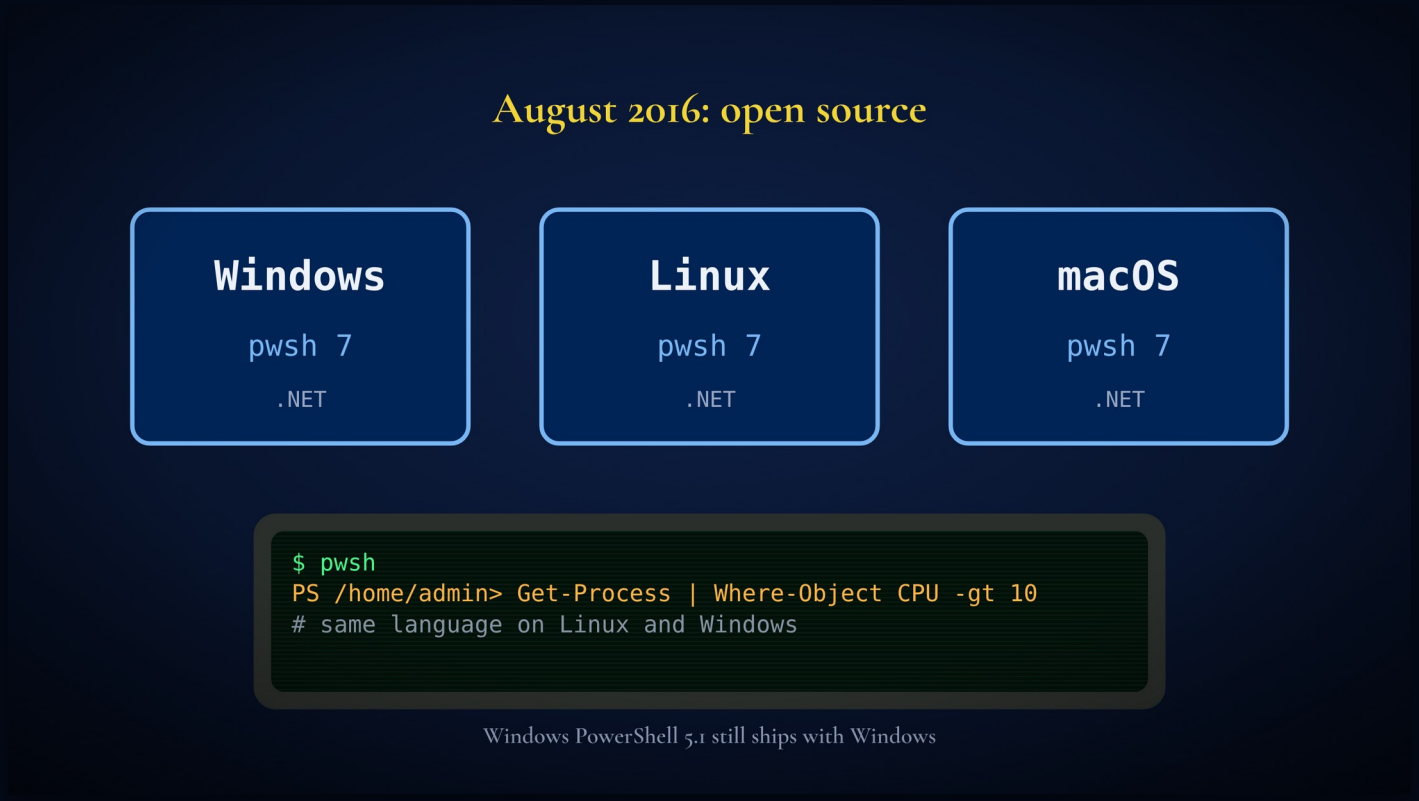
Managing Thousands of Machines



- 2009: PowerShell 2.0 remoting (Invoke-Command)
- Exchange · Active Directory · SQL Server · Azure · M365
- Desired State Configuration (DSC)

05

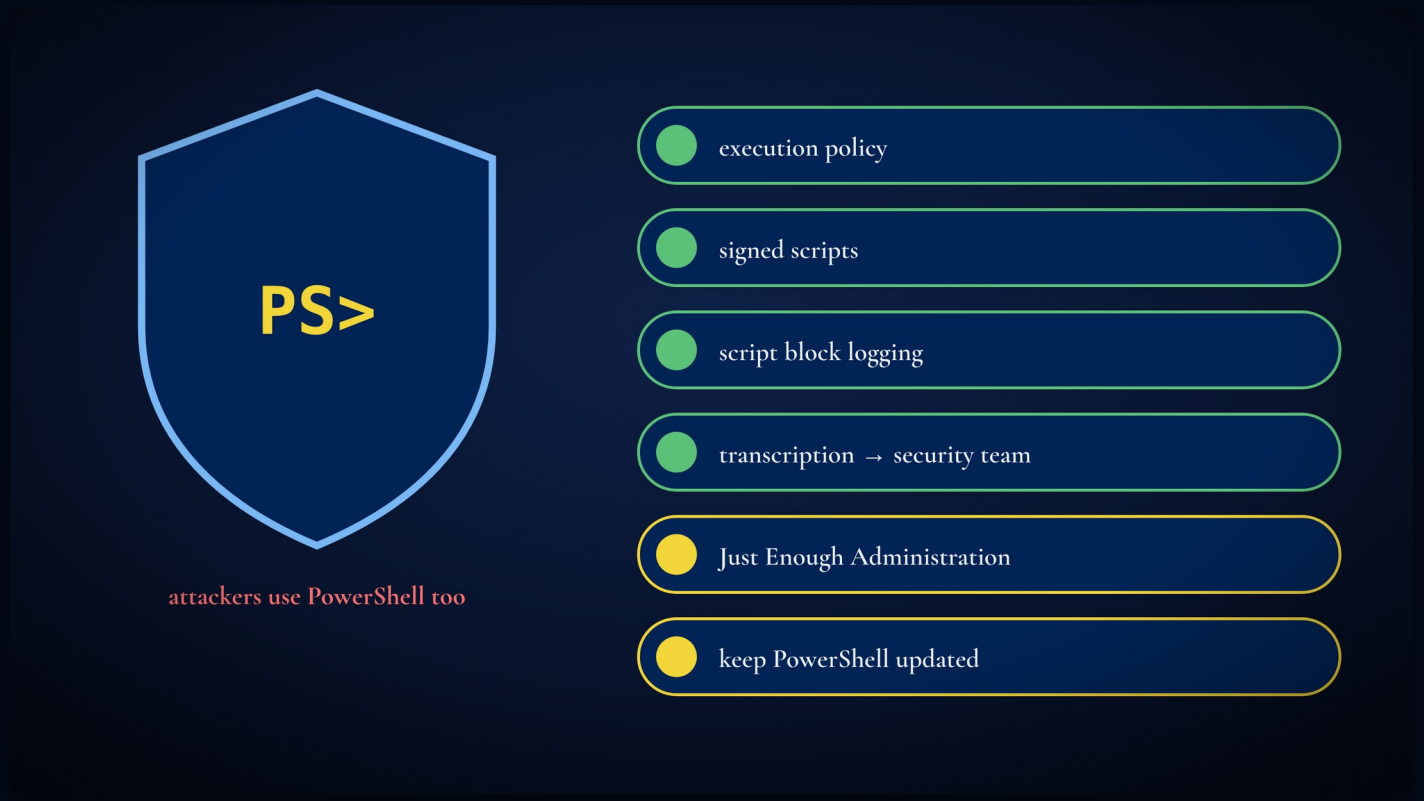
Open Source and Cross-Platform



- Aug 2016: open source, Linux and macOS
- PowerShell 7 on modern .NET
- Windows PowerShell 5.1 kept for compatibility

06

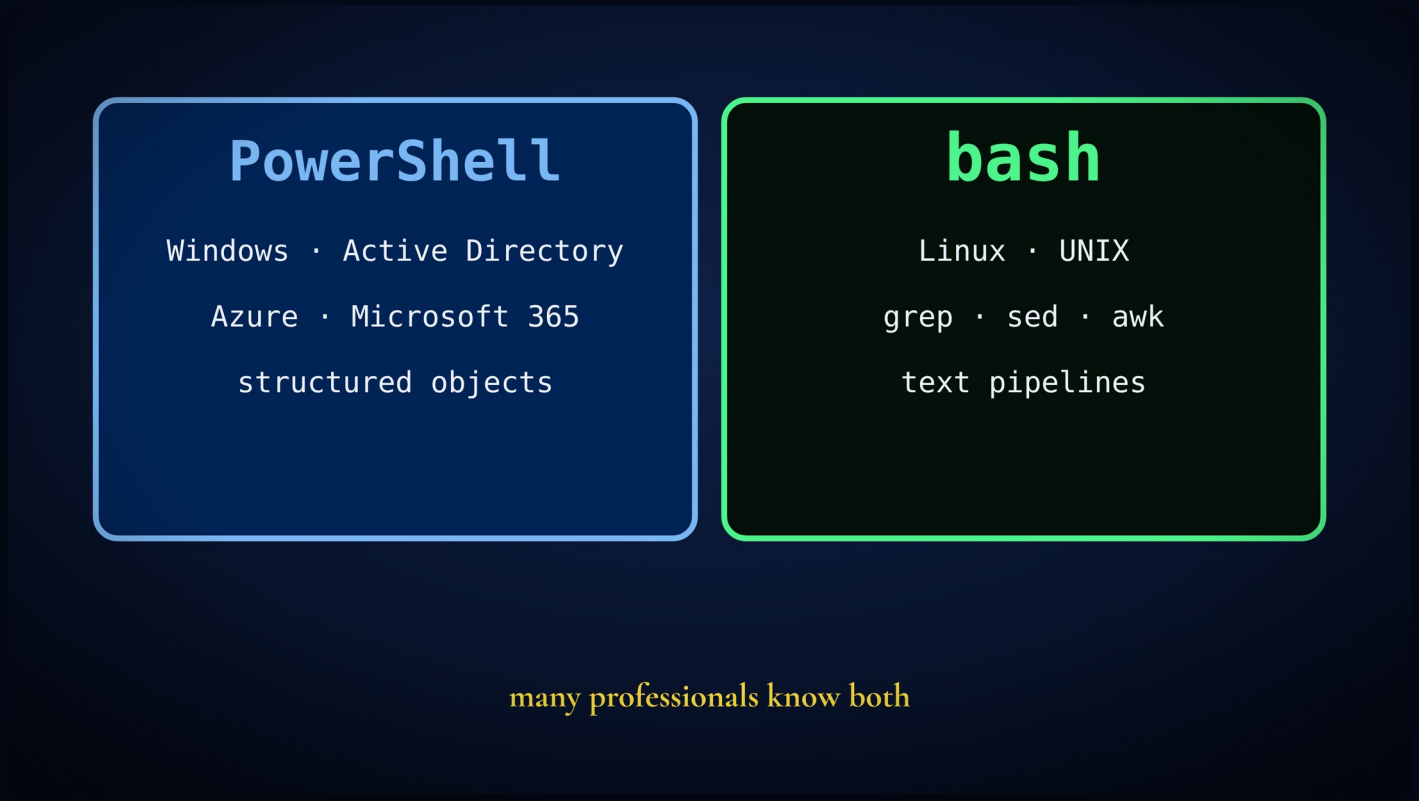
Power Needs Protection



- Attackers use PowerShell too
- Execution policy · signed scripts · script block logging
- Just Enough Administration · keep updated

07

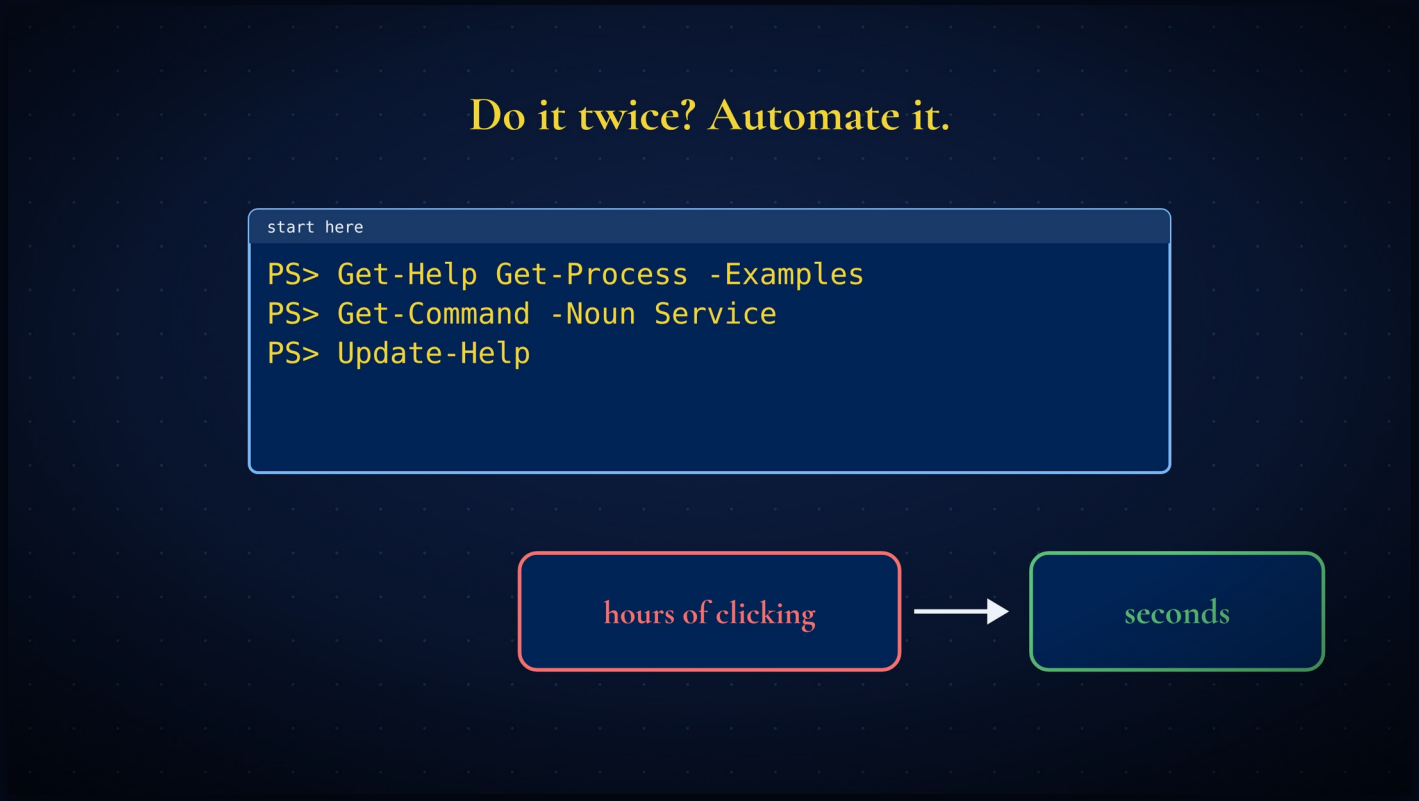
PowerShell or Bash?



- PowerShell: Windows, AD, Azure, M365, objects
- bash: classic Linux/UNIX, text tools
- Many professionals know both

08

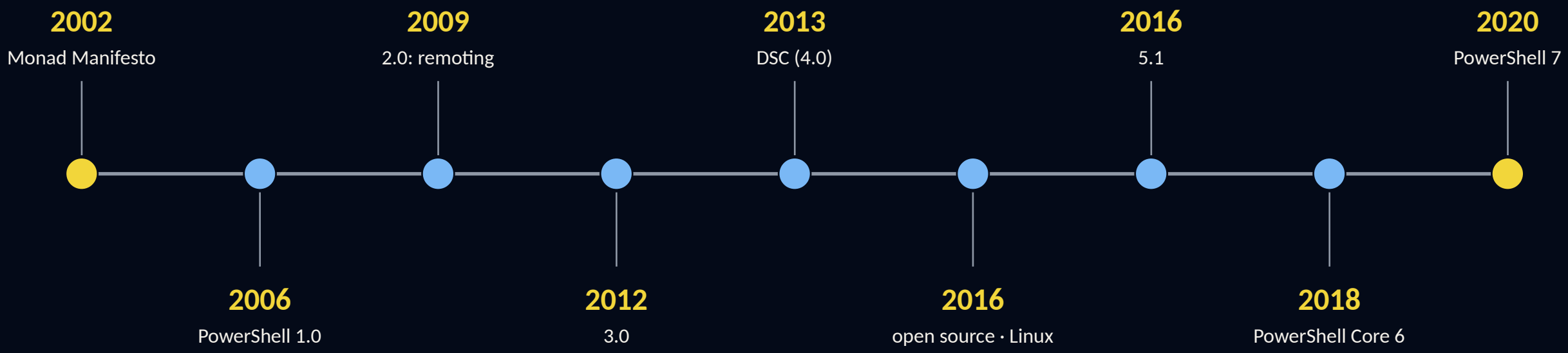
Automate the Boring Work



- Do it twice → automate it
- Start with Get-Help and Get-Command
- Hours of clicking → seconds of work

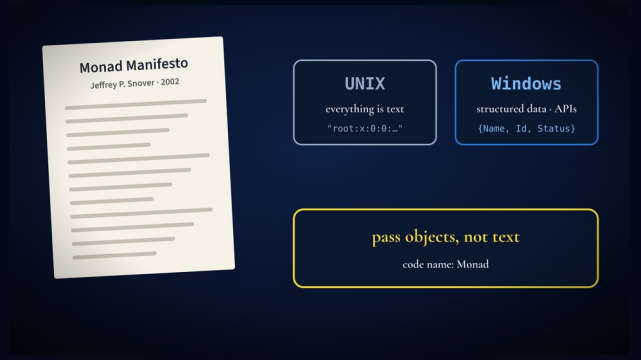
09

Timeline: 2002 to 2020



Sources and Further Reading

1. Jeffrey P. Snover, “Monad Manifesto” (2002) — jsnover.com
2. Microsoft Learn, PowerShell documentation — learn.microsoft.com/powershell
3. Microsoft, “PowerShell is open sourced and is available on Linux” (August 18, 2016)
4. Microsoft Learn, about_Logging_Windows · Just Enough Administration (JEA)





Thank you for watching

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