

PowerShell Fundamentals

Introduction

Hello World

Björn

bjorn.sundling@advania.com

@Bjompen

Simon

Emanuel

John

Emil

Jens

Stefan

Erik

Robin

You

Get-Participant

Get-Expectation

Agenda

Schedules and plans

PowerShell Command Structure

Finding Commands

.NET Framework

Variables

Input & Output

Pipelines

PSDrives

Working with Text

Script Flow - Conditions & Loops

PowerShell Remoting

Tools

Version Control

Scripting Best Practices

Bring Your Own Lab

What is PowerShell

History

Why use PowerShell?

Versions

Windows PowerShell (1-5)

PowerShell Core (6)

PowerShell (7)

Modules

Execution Policy

Safety - Not Security!

Lab 00 - Install PowerShell & VSCode (link)

Try Along!

PowerShell Command Structure

Verbs

Nouns

Parameters

Common Parameters

-WhatIf

Custom Parameters

Lab 01 - Running Commands

Finding Commands

Get/Update/Save -Help

Get-Command

Get-Verb

- Aliases
- Show-Command
 - How to Install for Cross-Platform
- Lab 02 - PowerShell Help

.NET Framework

- Objects
 - PowerShell Objects
 - Types
 - Members
 - Properties
 - Methods
 - Referencing Properties or Calling Methods
- Get-Member
 - InputObject
 - \$MyObject | Get-Member
- Lab 03 - Commands and Methods

Variables

- Goal: Don't Repeat Yourself!
- Types
 - Numbers
 - Text
 - Lists
 - Array
 - Hashtables
- Parentheses
- Casting
 - Implicit
 - Explicit
- Environment Variables
- Output Variables
- Built-In Variables
 - Preferences
 - Error
 - ErrorView
 - PSVersionTable
 - Env:PSModulePath
- Get-ChildItem Variable:
- Lab 04 - Variables

Input & Output

- Input
 - Read-Host
 - Can handle secure input!
 - Parameters
- Output
 - Write-Host & Write-Output
 - Streams
 - Output
 - Verbose
 - Debug
 - Warning
 - Error
 - Get-Error
 - Information
 - Out-* commands
- Lab 05 - Input & Output

Pipelines

- Linking Commands

- Pipeline Input
- Formatting
 - Format-Table
 - Format-List
 - Changes Output
- Filtering
 - Select-Object
 - Where-Object
 - Sort-Object
 - Group-Object
 - AsHashTable
- Out-GridView
 - Passthrough
- \$PSItem/\$_

Lab 06 - Pipelines

PSDrives

- Providers
 - FileSystem
 - Registry
 - Cert
 - AD
 - Azure
- Navigation and Exploration
 - Get-Command *Item*
 - Get-ChildItem
 - Get/Set -Location

Lab 07 - PSDrives

Working with Text

- Variables in Text
 - Single vs Double Quotes
 - Implicit ToString()
 - Expressions
- Multiline Strings
- String Manipulation
 - Replace
 - Trim
 - Split
 - Join
 - Case Sensitivity
- Regex
 - Match
 - Replace
- Commands
 - *-Content
 - Raw
 - Tail
 - Out-File
 - Select-String
 - Recursive File Search
 - AllMatches
 - ConvertTo-* / ConvertFrom-*
 - Export-* / Import-*
- Encoding
 - \$OutputEncoding
- Text Types
 - JSON
 - XML

HTML

Lab 08 - Text

Script Flow

Loops

ForEach-Object

\$PSItem/\$_

foreach

for

Keywords

break

continue

return

Behaviors in Pipelines

Conditions

Operators

Comparisons

-eq / -ne

-gt / -lt

-ge / -le

-like / -notlike

-contains / -notcontains

-in / -notin

Case Sensitivity

Compare-Object

Explicit / Implicit

Logical

-and / -or

-not

Range

if

switch

Loops with Conditions

while

do while

do until

Lab 09 - Conditions & Loops

PowerShell Remoting

PSSessions

Invoke-Command

Parallel

Using: Local Variables

Security

Network Logon

Mutual Trust

Encryption

HTTP / HTTPS / SSH

Lab 10 - Remoting

Tools

Editor

ISE (Deprecated)

VS Code

Workspace

Create Scripts

Move Line

Change All Occurences

Format Document

PSGallery

Windows Terminal

Version Control

git

GitHub

Azure DevOps

GitLab

Bitbucket

svn

Best Practices

Performance

Filter left - Format right

Measure-Command

Pipelines

Avoid Console Output

Arrays

Readability

Don't Use Aliases

Verb-Noun

\$null on left side comparison

VSCoDe Extensions

Don't run unknown code!

Megalab

More Reading

PowerShell Documentation ([link](#))

PSKoans ([link](#))

Community Best Practices ([link](#))

Learn PowerShell in a Month of Lunches, Linux and macOS Edition

PowerShell User Group Sweden ([link](#))

Automate administrative tasks by using PowerShell - Learn ([link](#))

Higway to PowerShell, Simon Wåhlin, Youtube