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Windows PowerShell 5 Preview April 2015

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www.dsinternals.com

18. – 21. května 2015

Tech·Ed DevCon

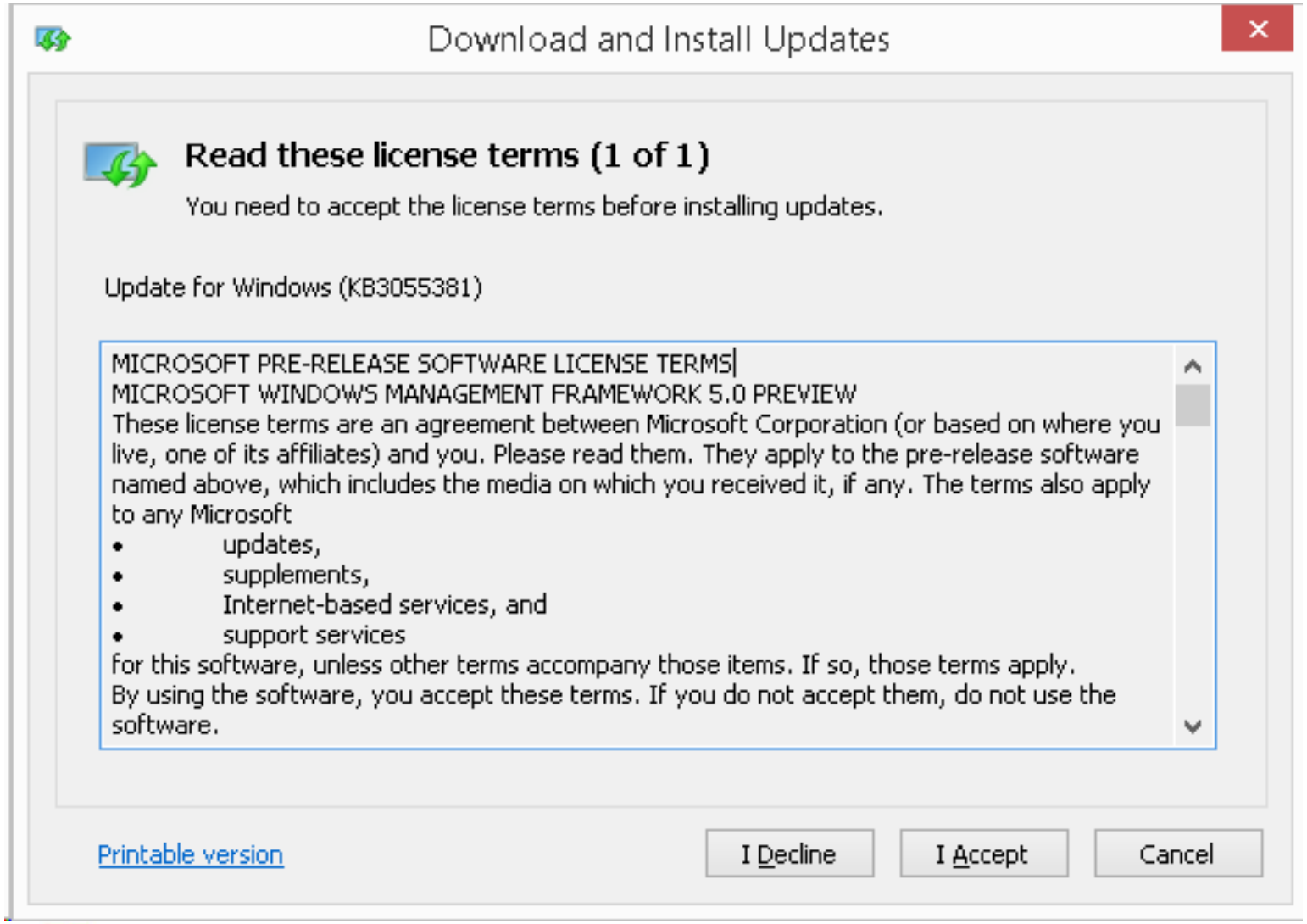
Agenda

- About PowerShell 4
- PowerShell ISE 4
- New Syntax
- Desired State Configuration
- New Cmdlets

Where to get it

- Built-in
  - Windows 10 Preview
- Windows Management Framework 5.0 Preview April 2015
  - Windows Server 2012 R2
  - Windows 8.1 Pro
  - Windows 8.1 Enterprise
  - Windows Server 2012
  - Windows 7 SP1
  - Windows Server 2008 R2 SP1

Installing PowerShell 5



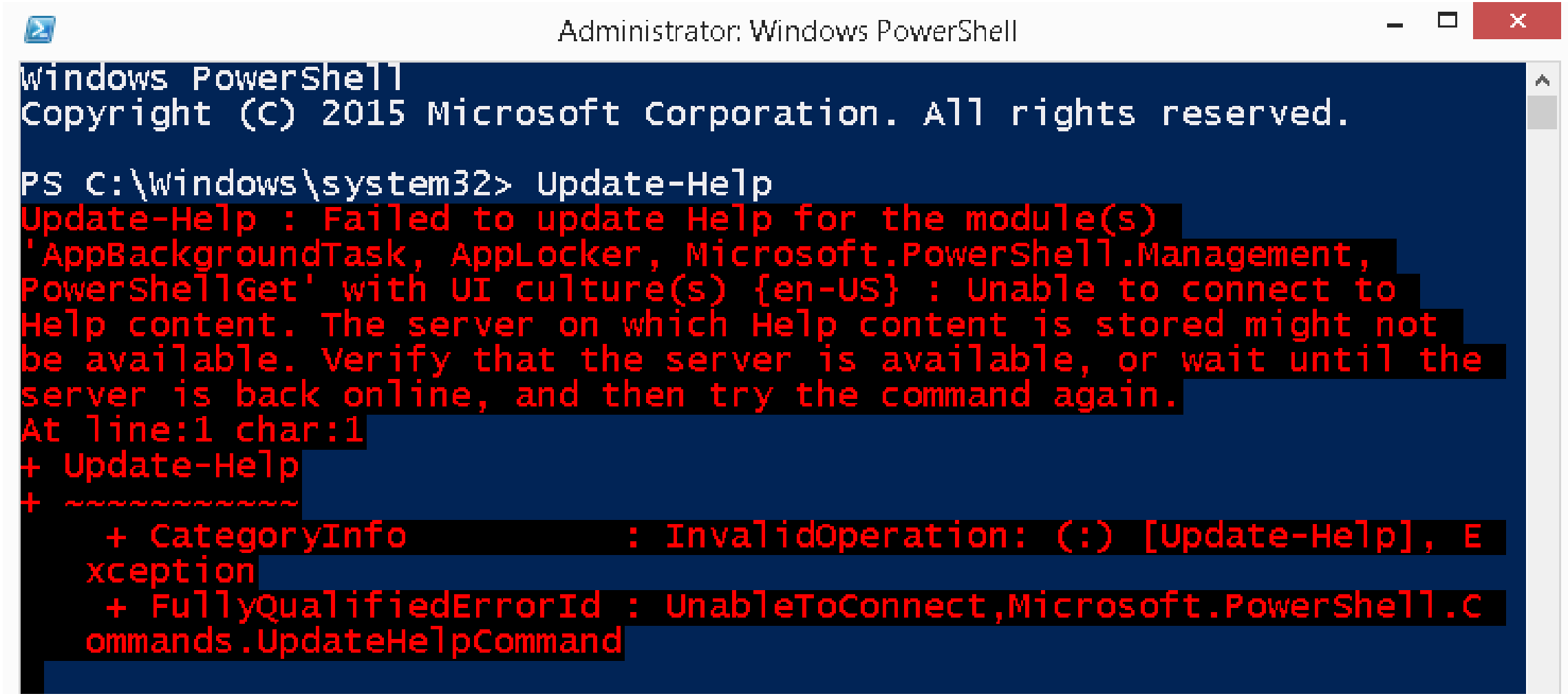
Checking PowerShell Version

```
PS C:\> $PSVersionTable

Name                           Value
----                           -----
PSVersion                      5.0.10105.0
WSManStackVersion              3.0
SerializationVersion           1.1.0.1
CLRVersion                     4.0.30319.34003
BuildVersion                   10.0.10105.0
PSCompatibleVersions           {1.0, 2.0, 3.0, 4.0...}
PSRemotingProtocolVersion      2.3
```

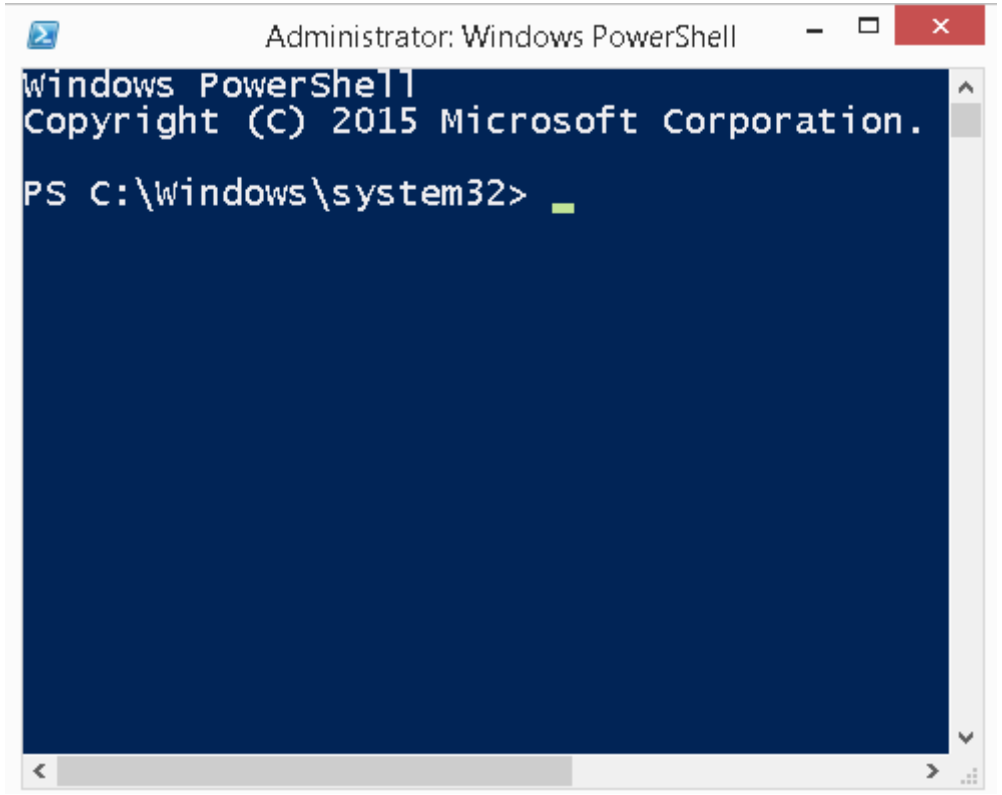
Known incompatibilities

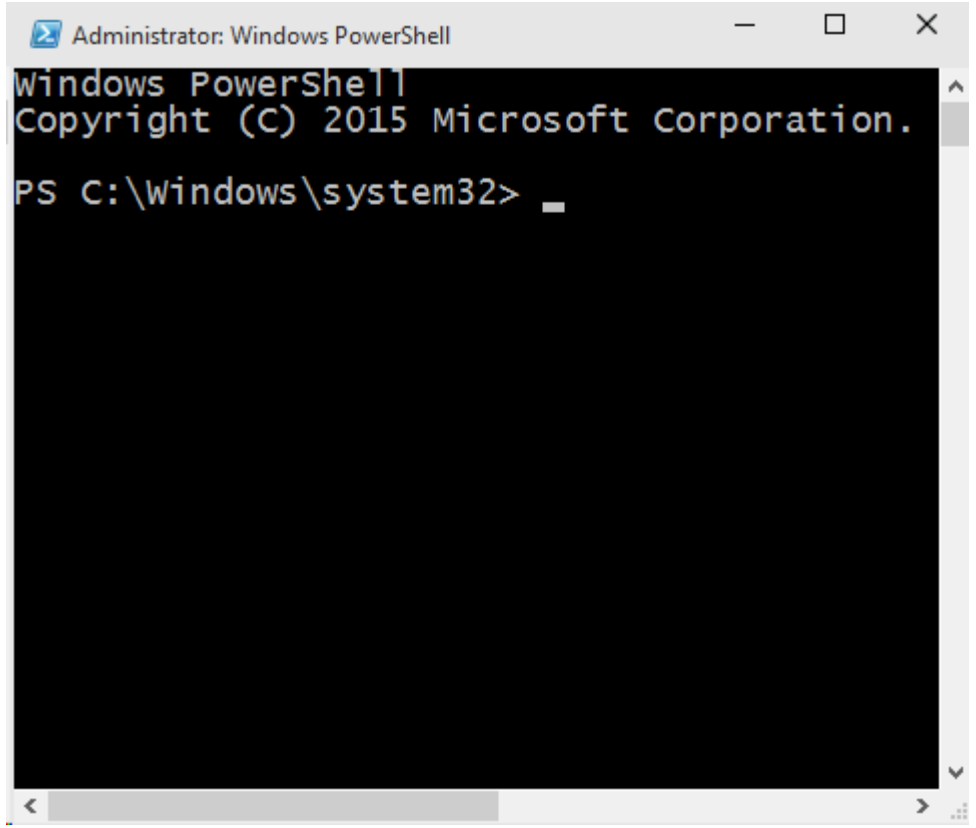
- System Center 2012 Configuration Manager (without SP1)
- Windows Small Business Server 2011 Standard

Missing Documentation

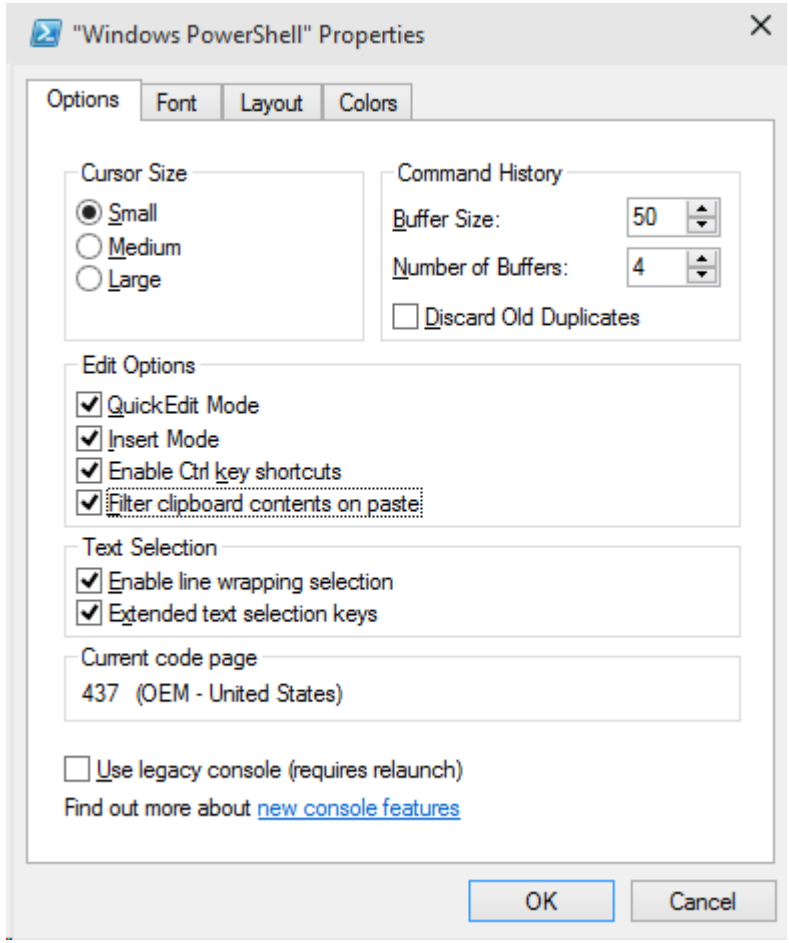


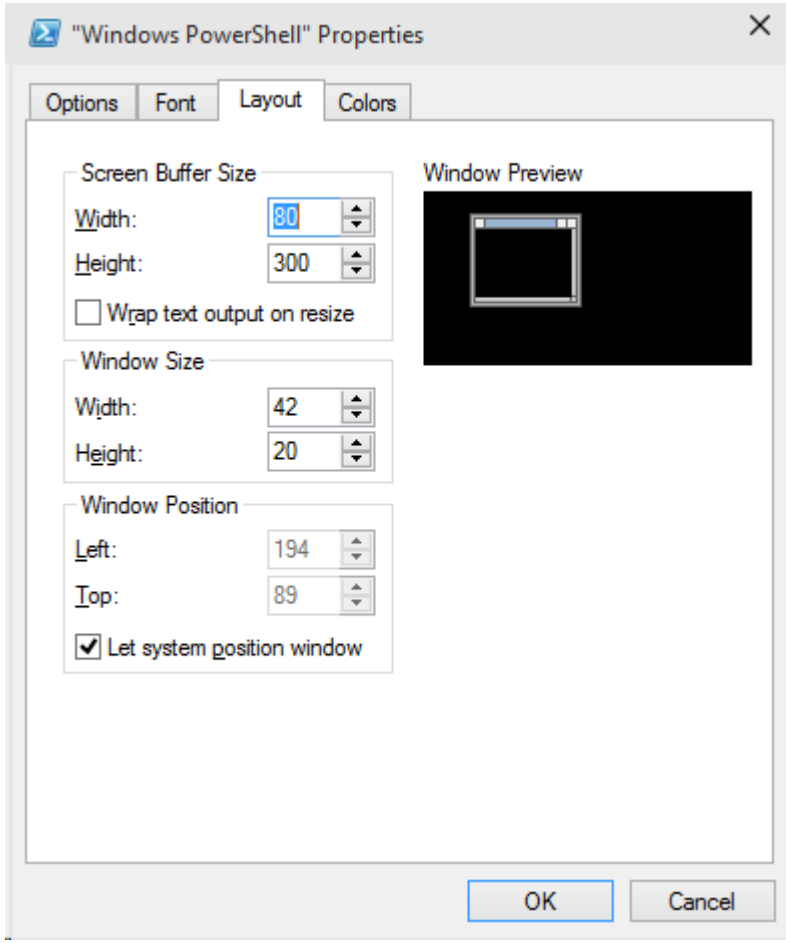
BLACK is BACK!

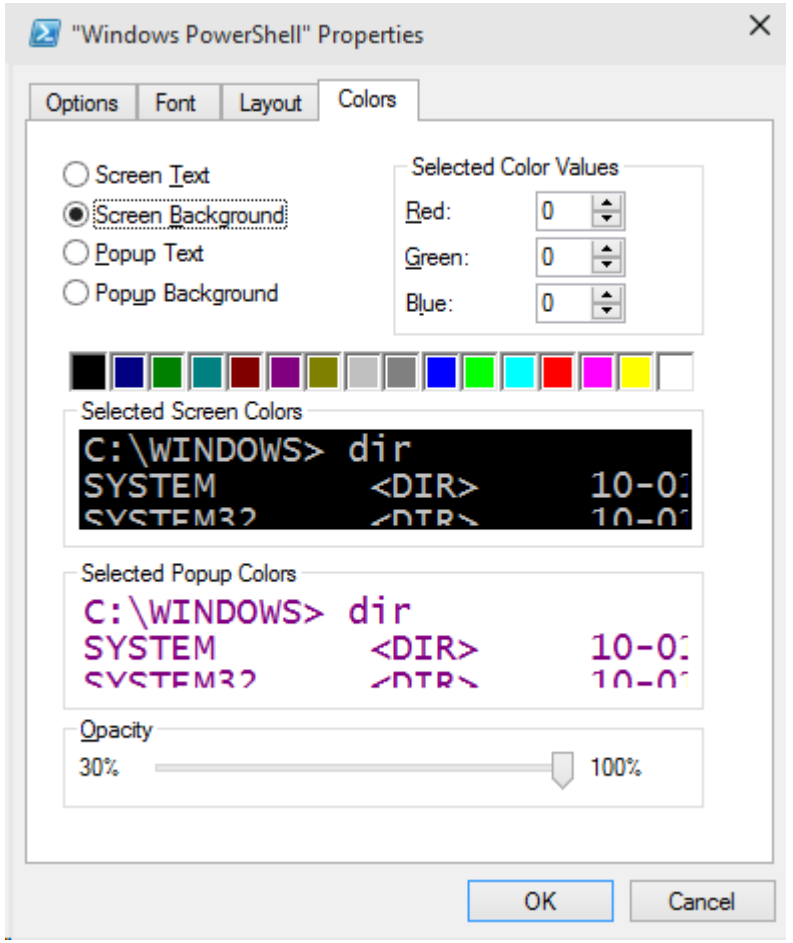




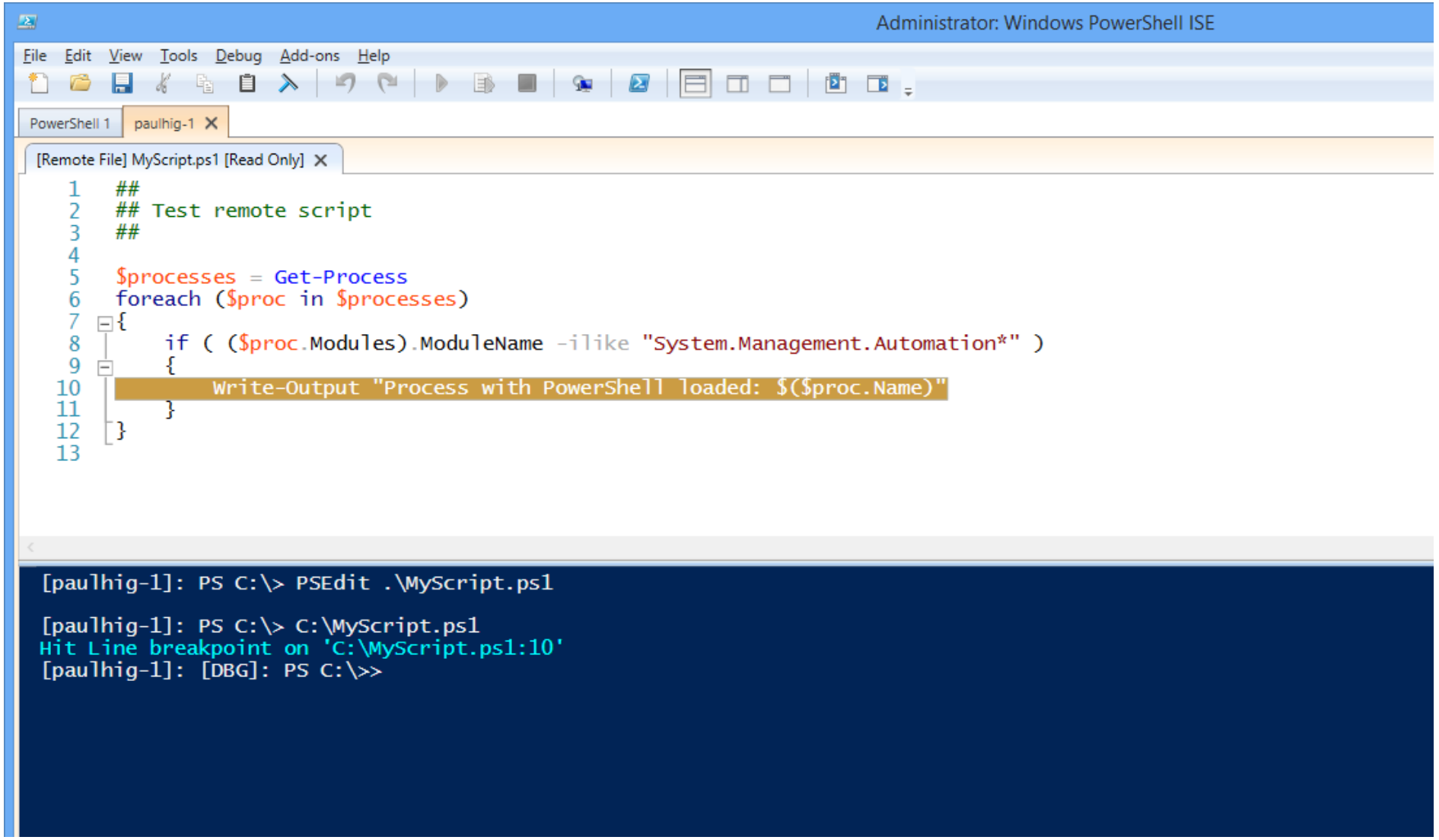
Windows 10 Command Line







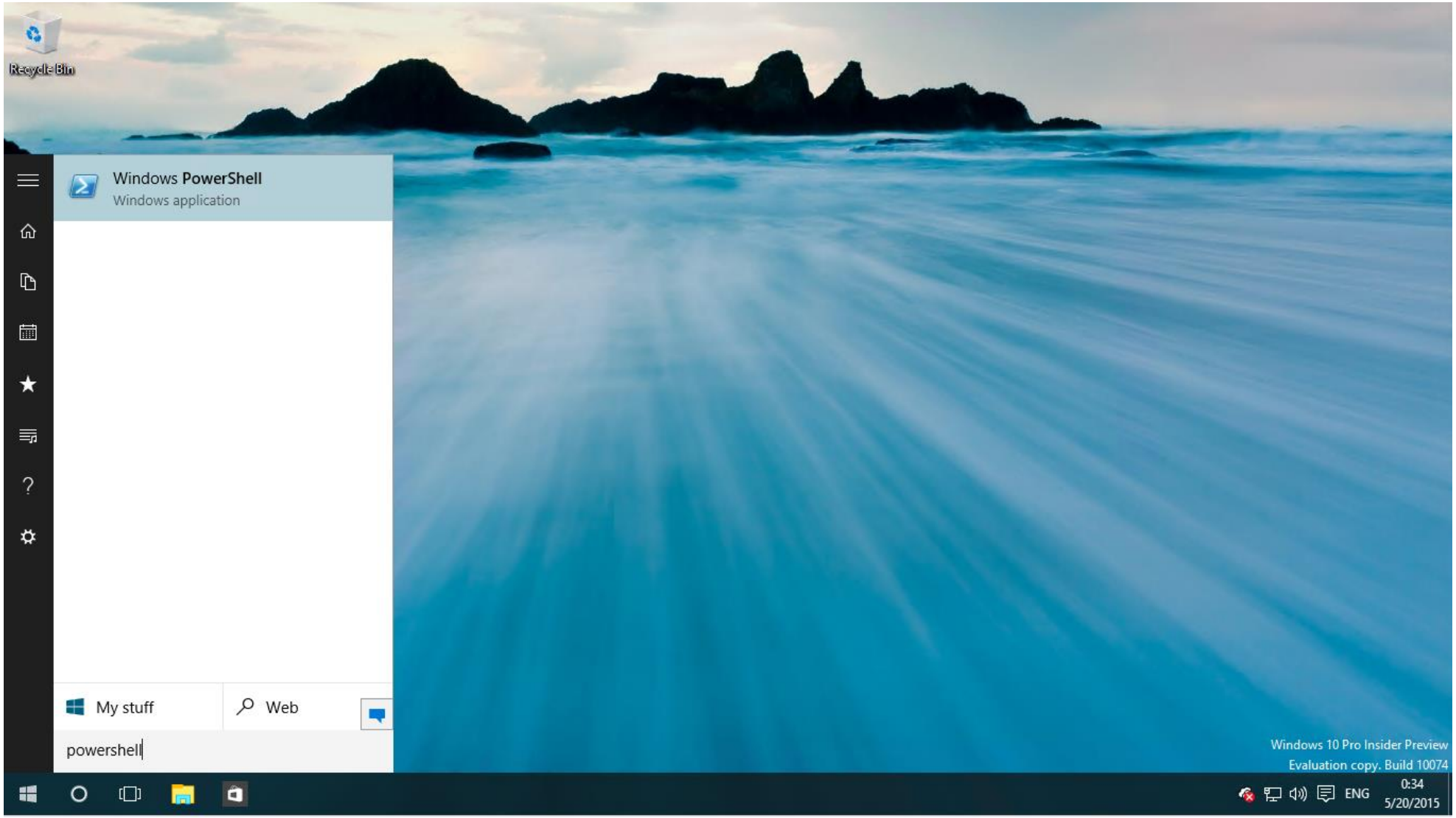
ISE Remote Debugging



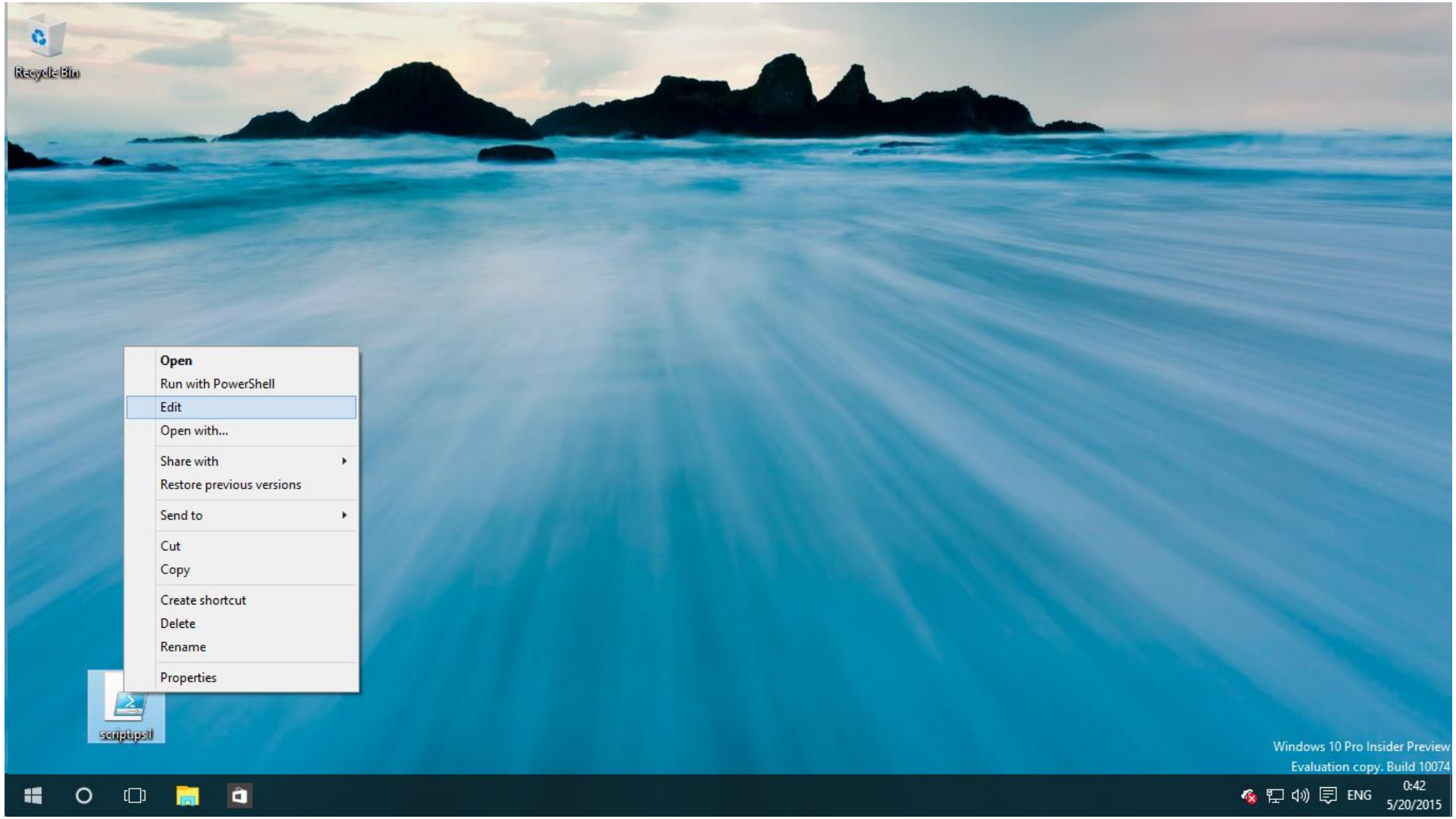
Advanced Debugging

- Attach to process
  - Enter-PSHostProcess
  - Exit-PSHostProcess
- Break All
  - Console: Ctrl+Break
  - ISE: Ctrl+B or Debug->Break All

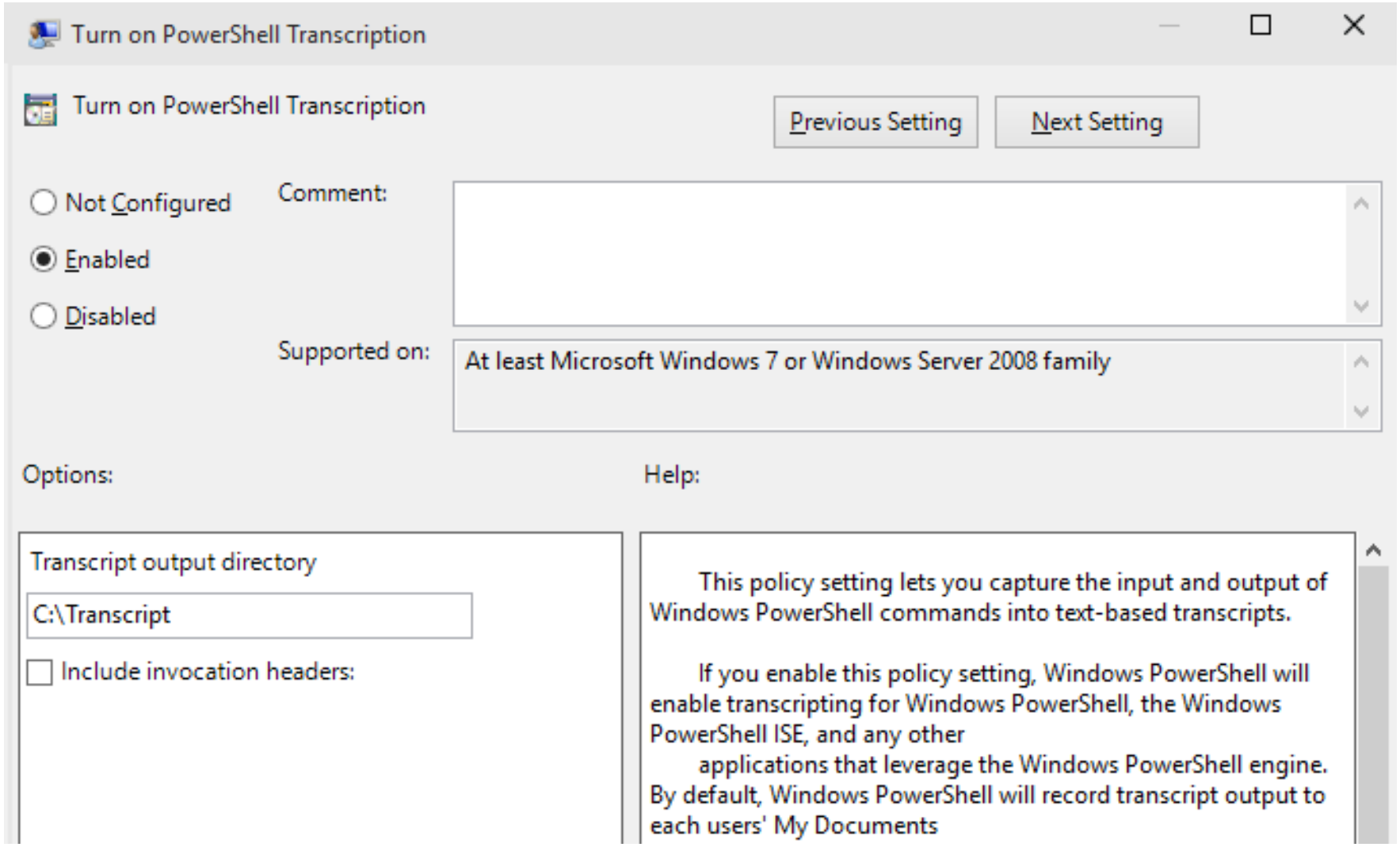
Cortana and ISE



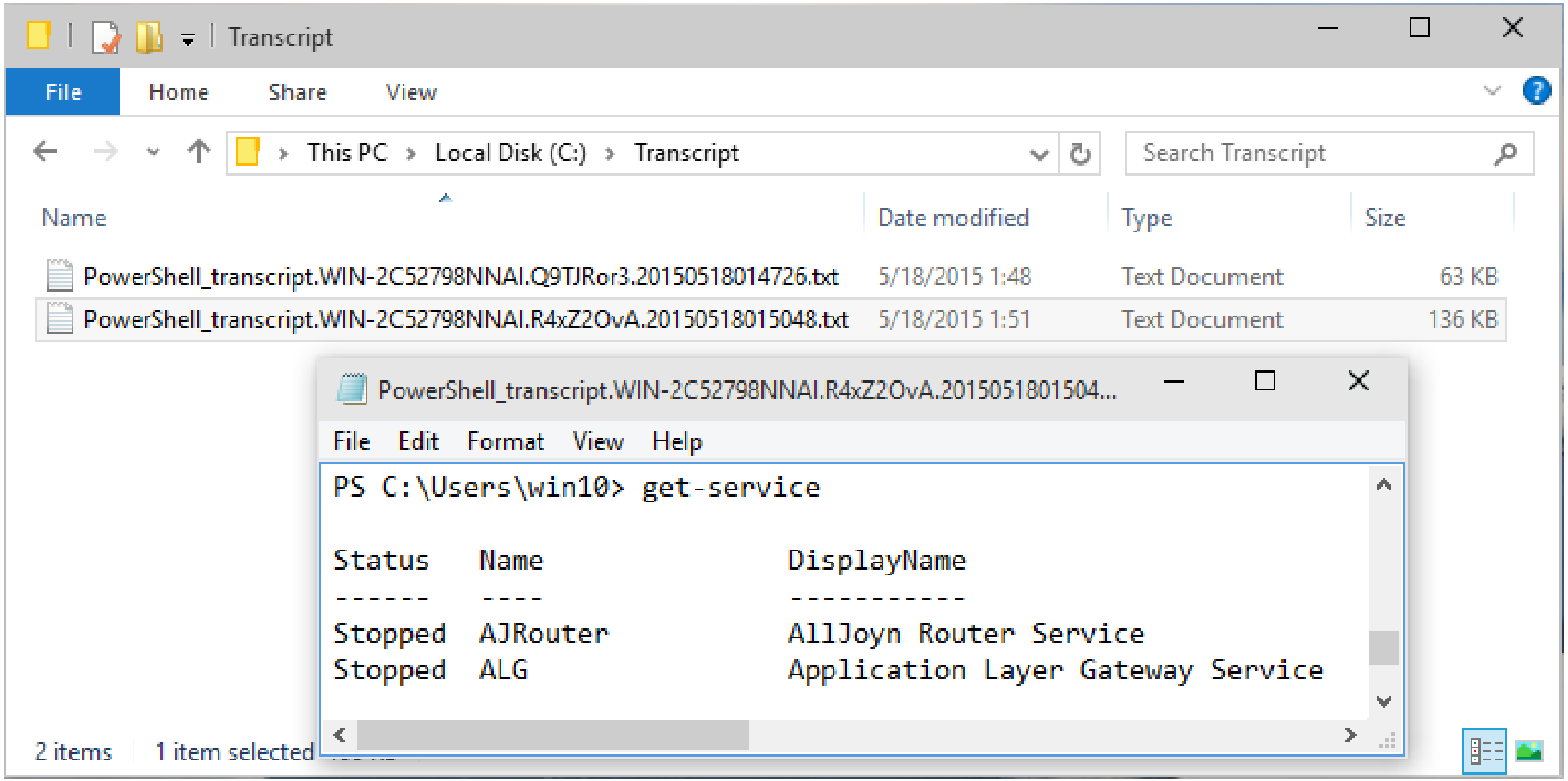
Context Menu



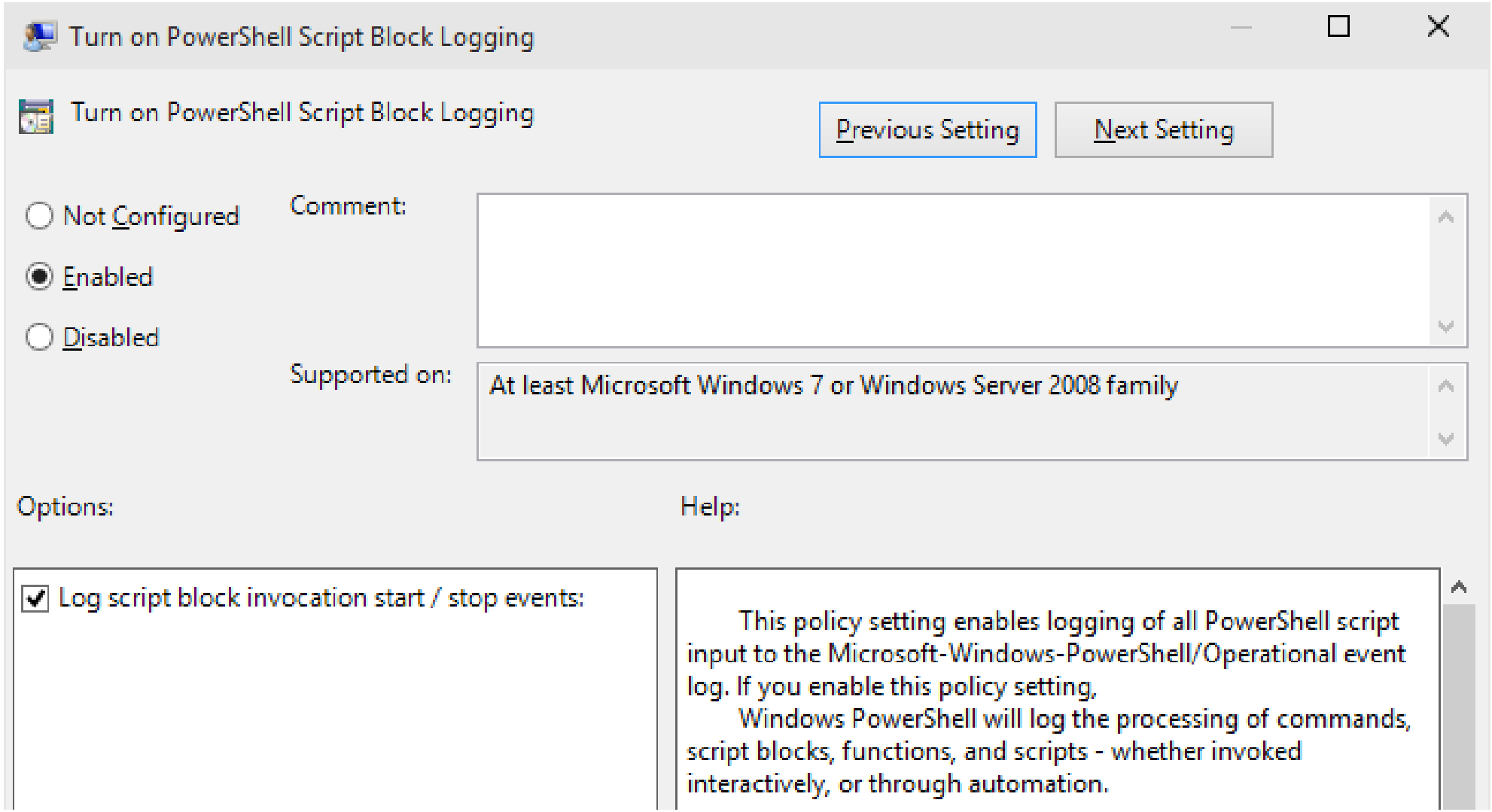
PowerShell Transcription



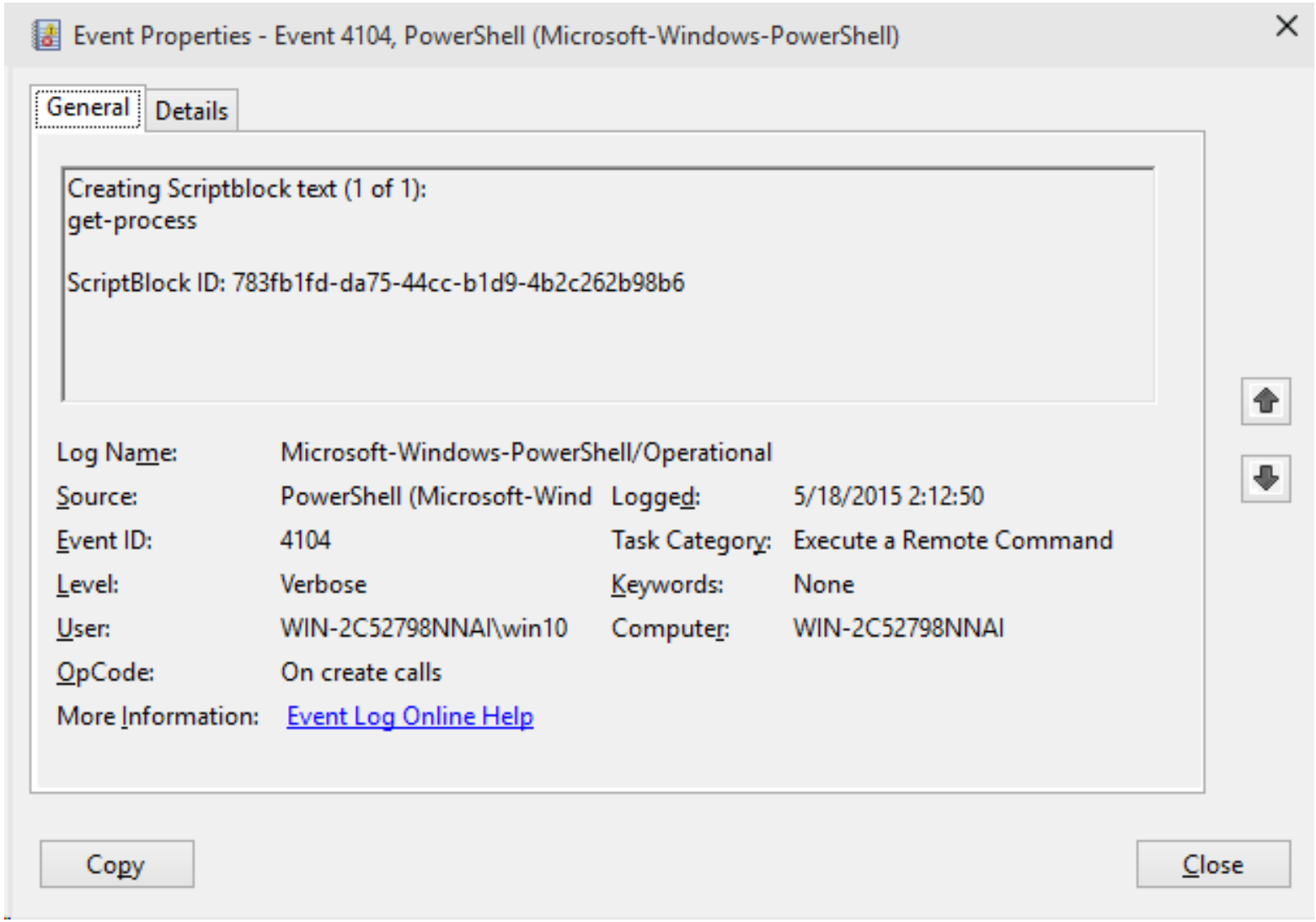
PowerShell Transcription



PowerShell Script Block Logging



PowerShell Script Block Logging



Symlink and Hardlink Support

- **New-Item -ItemType SymbolicLink** -Name MySymLinkDir -Target $pshome
- **New-Item -ItemType HardLink** -Path C:\Temp -Name MyHardLinkFile.txt -Value $pshome\profile.ps1
- **New-Item -ItemType Junction** -Path C:\Temp\MyJunctionDir -Value $pshome
- Get-ChildItem

DEMO

Managing .ZIP Files

- Compress-Archive

  [-Path] <String[]>

  [-DestinationPath] <String>

  [-CompressionLevel <Microsoft.PowerShell.Commands.CompressionLevel>]

  [-Update]

- Expand-Archive

  [-Path] <String>

  [-DestinationPath] <String>

DEMO

New-TemporaryFile

```
PS C:\> $tmp = New-TemporaryFile

PS C:\> $tmp.FullName
C:\Users\administrator.ADATUM\AppData\Local\Temp\tmp48FB.tmp

PS C:\> $tmp.Exists
True
```

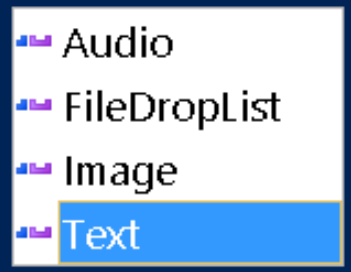
```
PS C:\> $tmp = [System.IO.Path]::GetTempFileName()

PS C:\> $tmp
C:\Users\administrator.ADATUM\AppData\Local\Temp\tmpE868.tmp
```

Recursion Depth

```
PS C:\Users\Administrator> Get-ChildItem -Recurse -Depth 1


    Directory: C:\Users\Administrator


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-r---        10/7/2013   1:55 PM                Contacts
d-r---        10/7/2013   2:23 PM                Desktop
d-r---        10/7/2013   1:55 PM                Documents
d-r---        10/7/2013   1:55 PM                Downloads
d-r---        10/7/2013   2:16 PM                Favorites
```

Clipboard Manipulation

```
PS C:\> Get-Clipboard -Format Image


Tag                   :
PhysicalDimension     : {Width=871, Height=321}
Size                  : {Width=871, Height=321}
Width                 : 871
Height                : 321
HorizontalResolution  : 96
VerticalResolution    : 96
Flags                 : 335888
RawFormat             : [ImageFormat: b96b3caa-0728-11d3-9d7b-0000f81ef32e]
PixelFormat           : Format32bppRgb
Palette               : System.Drawing.Imaging.ColorPalette
FrameDimensionsList   : {7462dc86-6180-4c7e-8e3f-ee7333a7a483}
PropertyIdList        : {}
PropertyItems         : {}

PS C:\> Get-Clipboard -Format
```



DEMO

New-Guid

```
PS C:\> New-Guid

Guid
----
de31f4bd-7279-4f93-950d-cf77a1502141
```

```
PS C:\> [guid]::NewGuid()

Guid
----
7b6286e3-9111-44c6-83ed-6d88415fc7c5
```

Convert-String

```
PS C:\> "Lee Holmes", "Steve Lee", "Jeffrey Snover" |
    Convert-String -Example @{Before = 'Bill Gates'; After = 'Gates, B.'}
Holmes, L.
Lee, S.
Snover, J.
```

DEMO

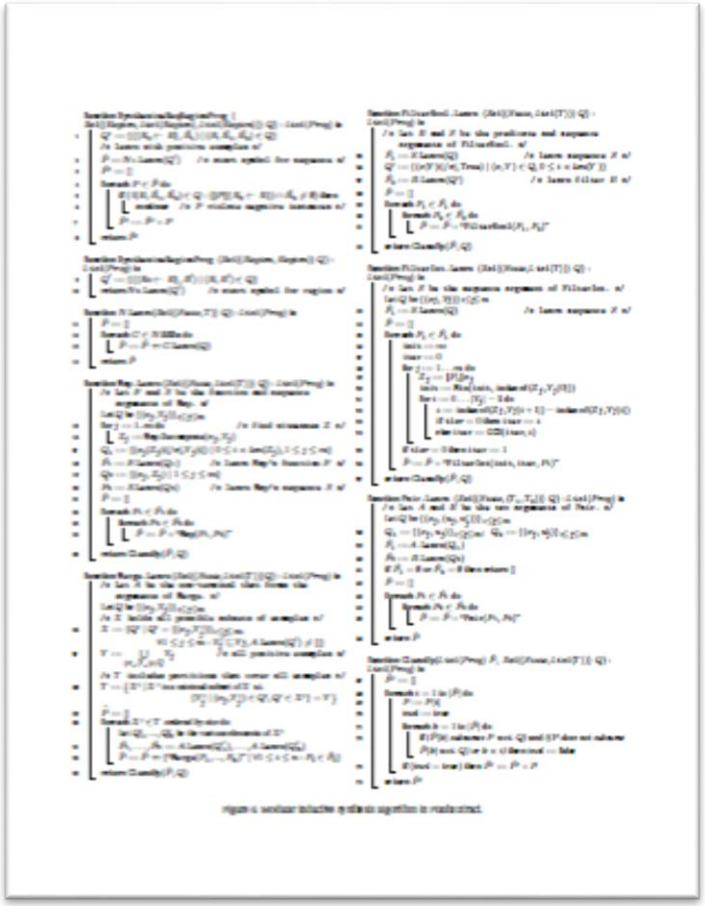
ConvertFrom-String

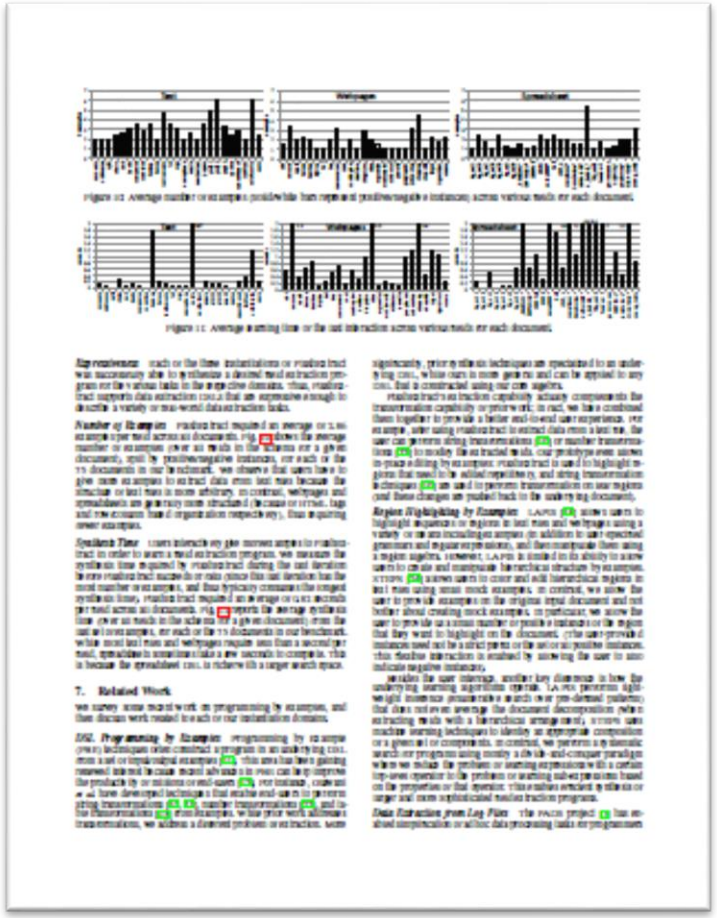
```
>> Get-Content .\addresses.output.txt | ConvertFrom-String -TemplateFile
.\addresses.template.txt |
>>> Format-Table -Auto

ExtentText                  Name                City       State
----------                  ----                ----       -----
Ana Trujillo...             Ana Trujillo        Redmond    WA
Antonio Moreno...           Antonio Moreno      Renton     WA
Thomas Hardy...             Thomas Hardy        Seattle    WA
Christina Berglund...       Christina Berglund  Redmond    WA
Hanna Moos...               Hanna Moos          Puyallup   WA
```

DEMO

Microsoft Research FlashExtract

FlashExtract: A Framework for Data Extraction by Examples





Warning

- Convert-String
- ConvertFrom-String
- ConvertFrom-StringData

Format-Hex

```
PS C:\> "hello world" | Format-Hex

           0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F

00000000   68 65 6C 6C 6F 20 77 6F 72 6C 64                  hello world



PS C:\> Format-Hex -Path 'C:\Users\slee\Downloads\DSP1009_1 1 1.doc'

           Path: C:\Users\slee\Downloads\DSP1009_1 1 1.doc

           0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F

00000000   D0 CF 11 E0 A1 B1 1A E1 00 00 00 00 00 00 00 00  ÐÏ.à¡±.á........
00000010   00 00 00 00 00 00 00 00 3E 00 03 00 FE FF 09 00  ........>...þ...
00000020   06 00 00 00 00 00 00 00 00 00 00 00 08 00 00 00  ................
```

Cryptographic Cmdlets (CMS - RFC5652)

- Get-CmsMessage [-Path] <string>

- Protect-CmsMessage [-To] <CmsMessageRecipient[]> [-Content] <string> [[-OutFile] <string>]

- Unprotect-CmsMessage [-Content] <string> [[-To] <CmsMessageRecipient[]>] [-IncludeContext]

Cryptographic Cmdlets

```
106 [C:\temp]
>> $protected = "Hello World" | Protect-CmsMessage -To "*me@somewhere.com*"

107 [C:\temp]
>> $protected

-----BEGIN CMS-----
MIIBqAYJKoZIhvcNAQcDoIIBmTCCAZUCAQAxggFQMIIBTAIBADA0MCAxHjAcBgNVBAMMFWxlZWhv
bG1AbWljcm9zb2Z0LmNvbQIQQYHsbcXnjIJCtH+OhGmc1DANBgkqhkiG9w0BAQcwAASCAQAnkFHM
proJnFy4geFGfyNmxH3yeoPvwEYzdnsoVqqDPAd8D3wao77z7OhJEXwz9GeFLnxD6djKV/tF4PxR
E27aduKSLbnxfpf/sepZ4fUkuGibnwWFrxGE3B1G26MCenHWjYQiqv+Nq32Gc97qEAERrhLv6S4R
G+2dJEnesW8A+z9QPo+DwYU5FzD0Td0ExrkswVckpLNR6j17Yaags3ltNVmbdEXekhi6Psf2MLMP
TSO79lv2L0KeXFGuPOrdzPAwCkV0vNEqTEBeDnZGrjv/5766bM3GW34FXApod9u+VSFpBnqVOCBA
DVDraA6k+xwBt66cV84OHLkh0kT02SIHMDwGCSqGSIb3DQEHATAdBglghkgBZQMEASoEEJbJaiRl
KMnBoD1dkb/FzSWAEBaL8xkFwCu0e1ZtDj7nSJc=
-----END CMS-----

108 [C:\temp]
>> $protected | Unprotect-CmsMessage
Hello World
```

OData Utils

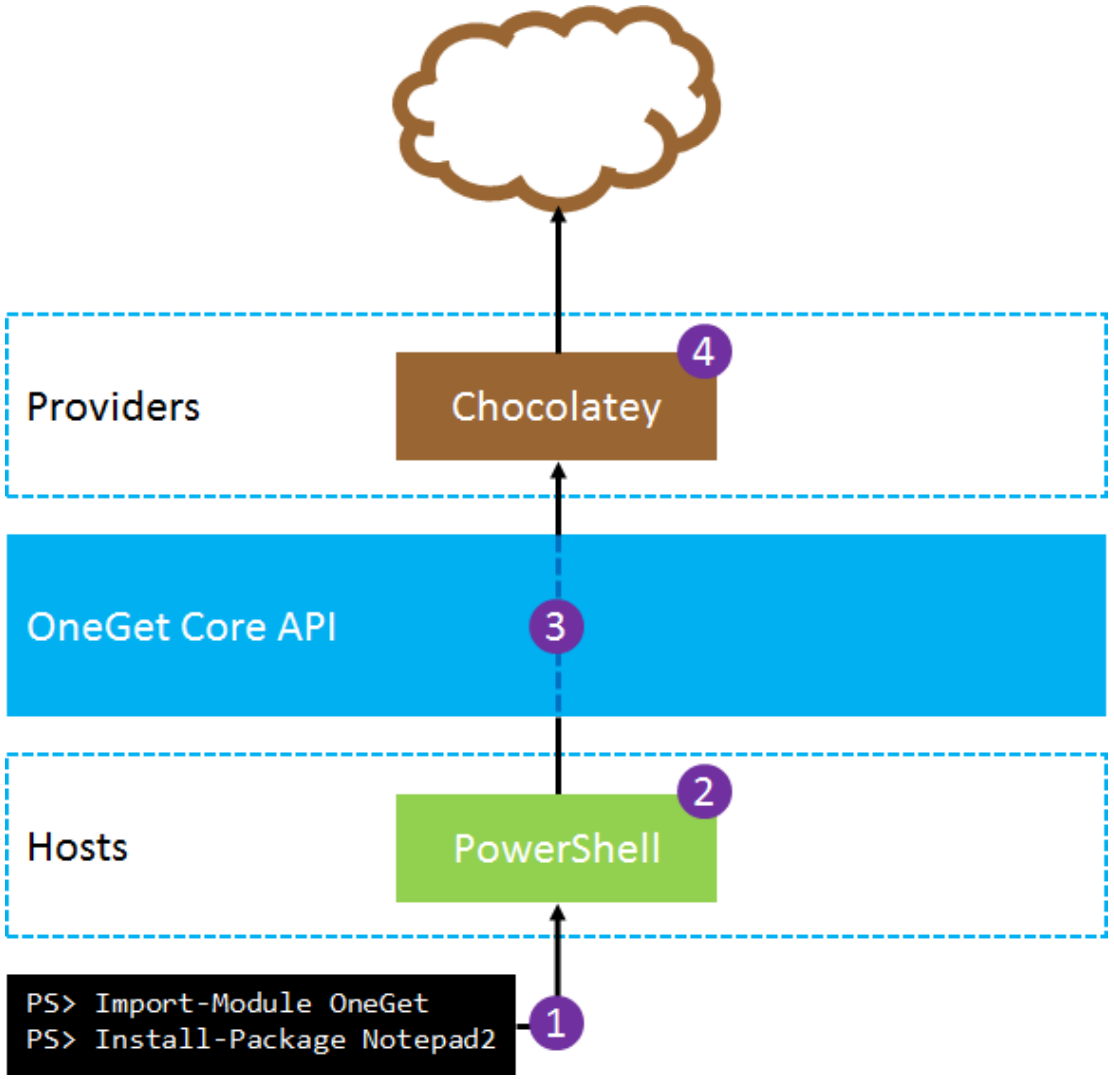
```
$uri =
"http://services.odata.org/V3/(S(readwrite))/OData/OData.svc/"

Export-ODataEndpointProxy -Uri $uri -OutputModule .\Service
```

DEMO

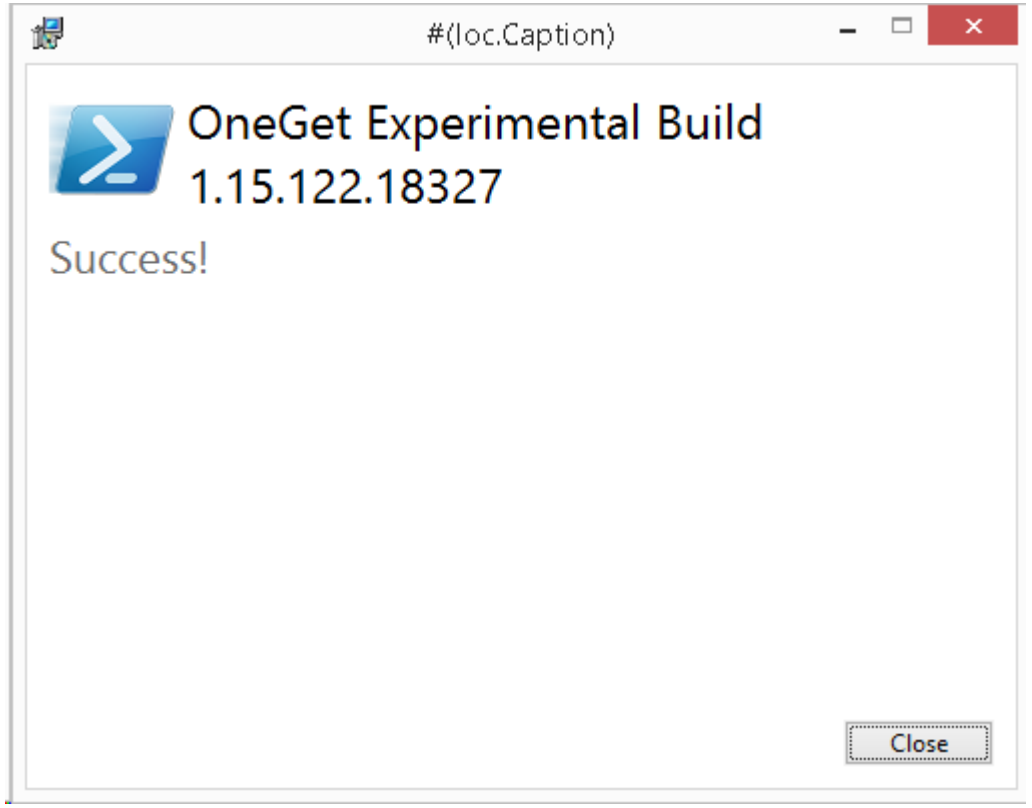
Web Services in PowerShell

- SOAP / XML Web Services
  - New-WebServiceProxy
- OASIS OData
  - Export-ODataEndpointProxy
- Generic REST
  - Invoke-RestMethod
- Generic HTTP
  - Invoke-WebRequest
  - ConvertFrom-Json
  - ConvertTo-Json
  - Select-Xml

OneGet

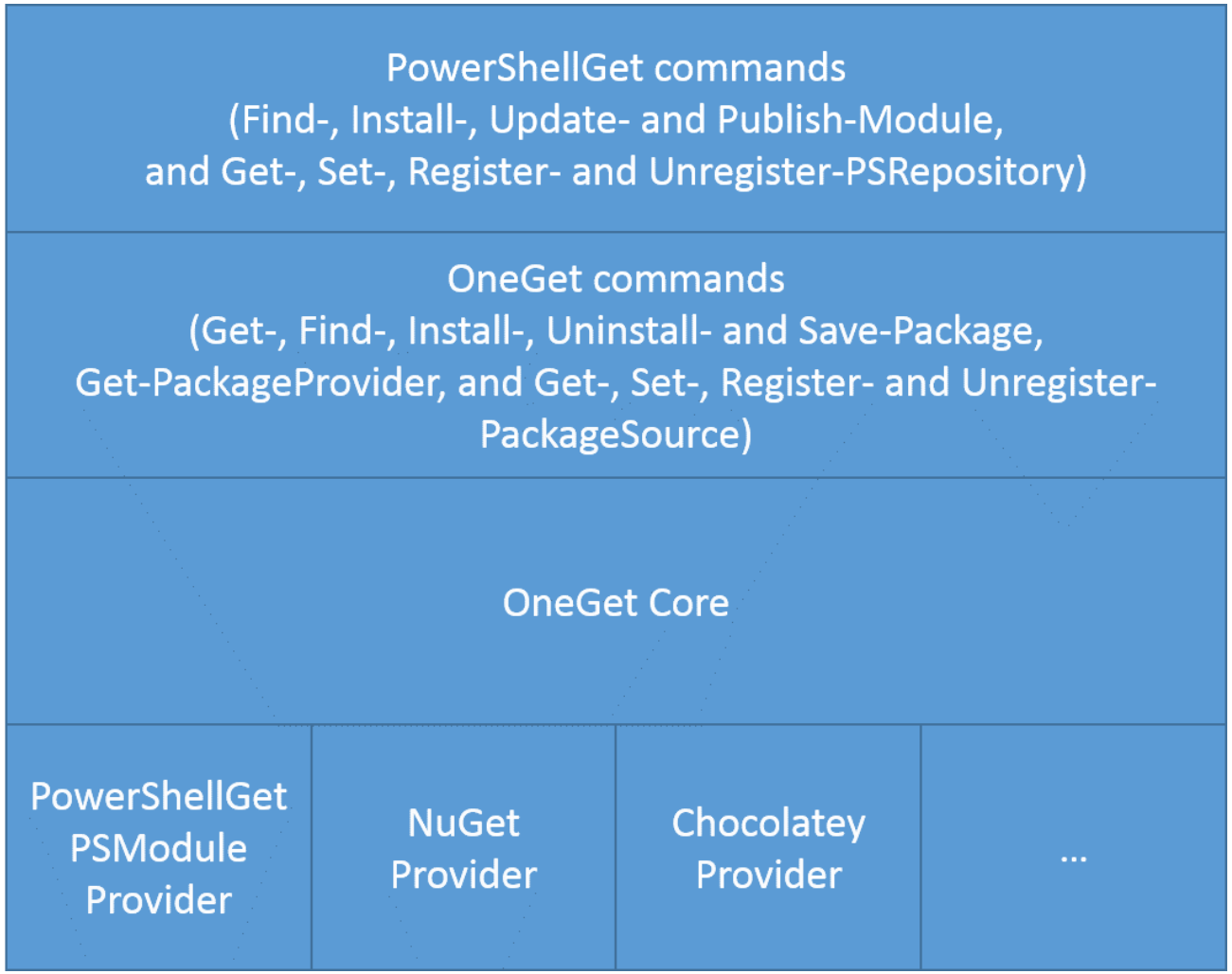

Providers
Chocolatey
4
OneGet Core API
3
Hosts
PowerShell
2
PS> Import-Module OneGet
PS> Install-Package Notepad2
1

Installing from GitHub

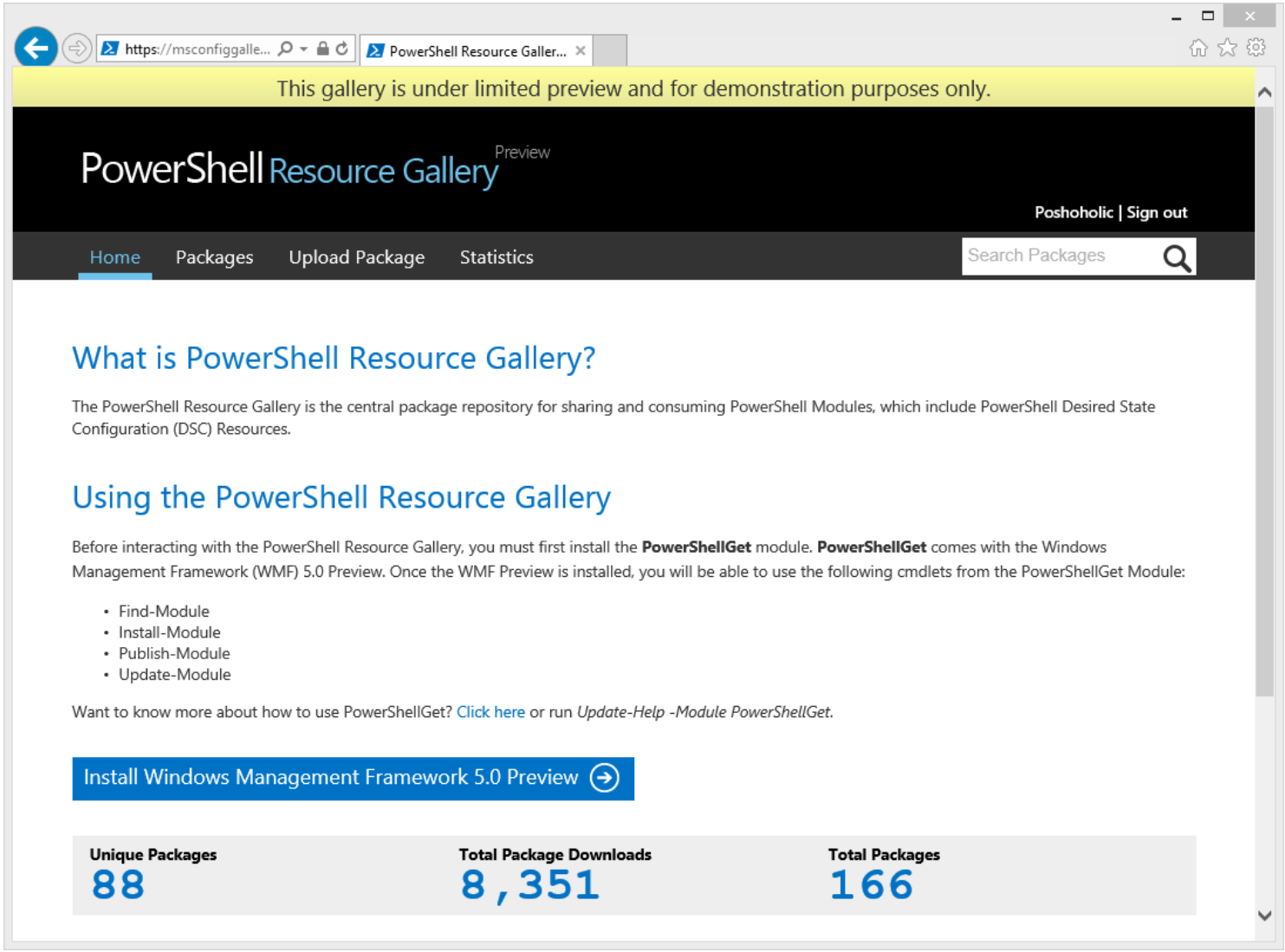


DEMO

PowerShellGet



PowerShellGet Gallery



SxS Module Version

```
PS C:\windows\system32> Get-Module -ListAvailable -Name ContosoServer | Format-List
Name,Version,ModuleBase



Name       : ContosoServer

Version    : 2.0

ModuleBase : C:\Program Files\WindowsPowerShell\Modules\ContosoServer\2.0



Name       : ContosoServer

Version    : 1.0

ModuleBase : C:\Program Files\WindowsPowerShell\Modules\ContosoServer\1.0
```

Switch Management

```
PS> Get-Command *-NetworkSwitch*
```

CommandType	Name	Source
Function	Disable-NetworkSwitchEthernetPort	NetworkSwitch
Function	Disable-NetworkSwitchFeature	NetworkSwitch
Function	Disable-NetworkSwitchVlan	NetworkSwitch
Function	Enable-NetworkSwitchEthernetPort	NetworkSwitch
Function	Enable-NetworkSwitchFeature	NetworkSwitch
Function	Enable-NetworkSwitchVlan	NetworkSwitch
Function	Get-NetworkSwitchEthernetPort	NetworkSwitch
Function	Get-NetworkSwitchFeature	NetworkSwitch
Function	Get-NetworkSwitchGlobalData	NetworkSwitch
Function	Get-NetworkSwitchVlan	NetworkSwitch
Function	New-NetworkSwitchVlan	NetworkSwitch
Function	Remove-NetworkSwitchEthernetPortIPAddress	NetworkSwitch
Function	Remove-NetworkSwitchVlan	NetworkSwitch
Function	Restore-NetworkSwitchConfiguration	NetworkSwitch
Function	Save-NetworkSwitchConfiguration	NetworkSwitch
Function	Set-NetworkSwitchEthernetPortIPAddress	NetworkSwitch
Function	Set-NetworkSwitchPortMode	NetworkSwitch
Function	Set-NetworkSwitchPortProperty	NetworkSwitch
Function	Set-NetworkSwitchVlanProperty	NetworkSwitch

Switch Management

```
PS> $ip = "10.0.0.2"
PS> $sessionOption = New-CimSessionOption -UseSsl -SkipCACheck -SkipCNCheck -SkipRevocationCheck
PS> $s = New-CimSession -CN $ip -port 5986 -Auth Basic -Credential admin -SessionOption
$sessionOption
```

```
PS> Get-NetworkSwitchFeature -CimSession $s
ElementName      InstanceID           FeatureName      IsEnabled PSComputerName
-----------      ----------           -----------      --------- --------------
SSH              Arista:Feature:2               2           True 10.0.0.2
Tacacs           Arista:Feature:3               3           True 10.0.0.2
BGP              Arista:Feature:4               4          False 10.0.0.2
VLAN             Arista:Feature:5               5           True 10.0.0.2
LACP             Arista:Feature:6               6           True 10.0.0.2
DHCP             Arista:Feature:7               7          False 10.0.0.2
LLDP             Arista:Feature:8               8           True 10.0.0.2
```

Switch Management

```
PS>  Get-NetworkSwitchEthernetPort -CimSession $s | Format-Table InstanceID, ElementName, MaxSpeed,
PortNumber, EnabledState

InstanceID      ElementName           MaxSpeed      PortNumber    EnabledState
----------      -----------           --------      ----------    ------------
Arista:Ether... Ethernet1          1410065408               1               2
Arista:Ether... Ethernet2          1410065408               2               2
Arista:Ether... Ethernet3          1410065408               3               2
Arista:Ether... Management1        1410065408              97               2
```

```
PS>   Disable-NetworkSwitchEthernetPort -PortNumber 3 -CimSession $s

                ReturnValue Job                            PSComputerName
               ----------- ---                           --------------
                          0                              10.0.0.2
```

Custom Enums and Classes

```
enum Color
{
    Green
    Red
    Blue
}
```

```
class Dog : Pet
{
    Dog([string] $Name) : base($Name)
    {
    }

    [string] Greet()
    {
        return 'Bark'
    }
}
```

DEMO

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Kentico

Novinky PowerShell 5 Preview

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18. – 21. května 2015

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