FP + PROFESSIONAL EDUCATION

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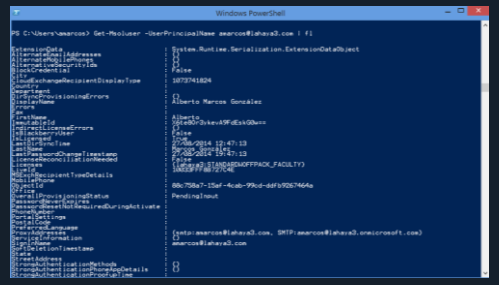
BEST PRACTICES FOR POWERSHELL IN AZURE



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Introducción a Azure

Acceso, Portal Azure

CÓMO ACCEDER

https://portal.azure.com

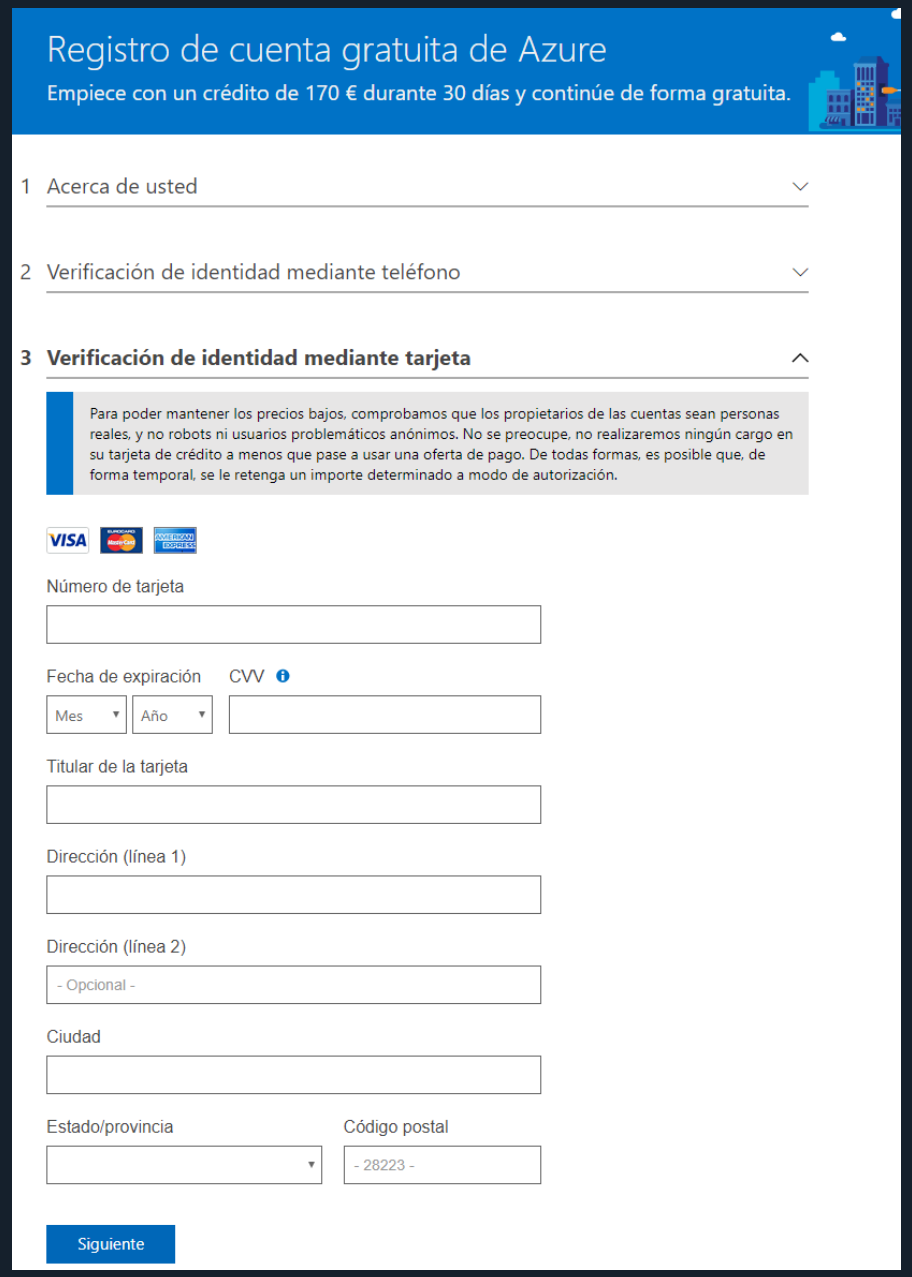
Credenciales Microsoft (cuenta ms)

Credenciales corporativas (SSO)

CÓMO ACCEDER

Es posible registrar una cuenta gratuita.

Se necesita un nº de móvil y una tarjeta de crédito (no pasan cargos)



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ARM – AZURE RESOURCE MANAGER

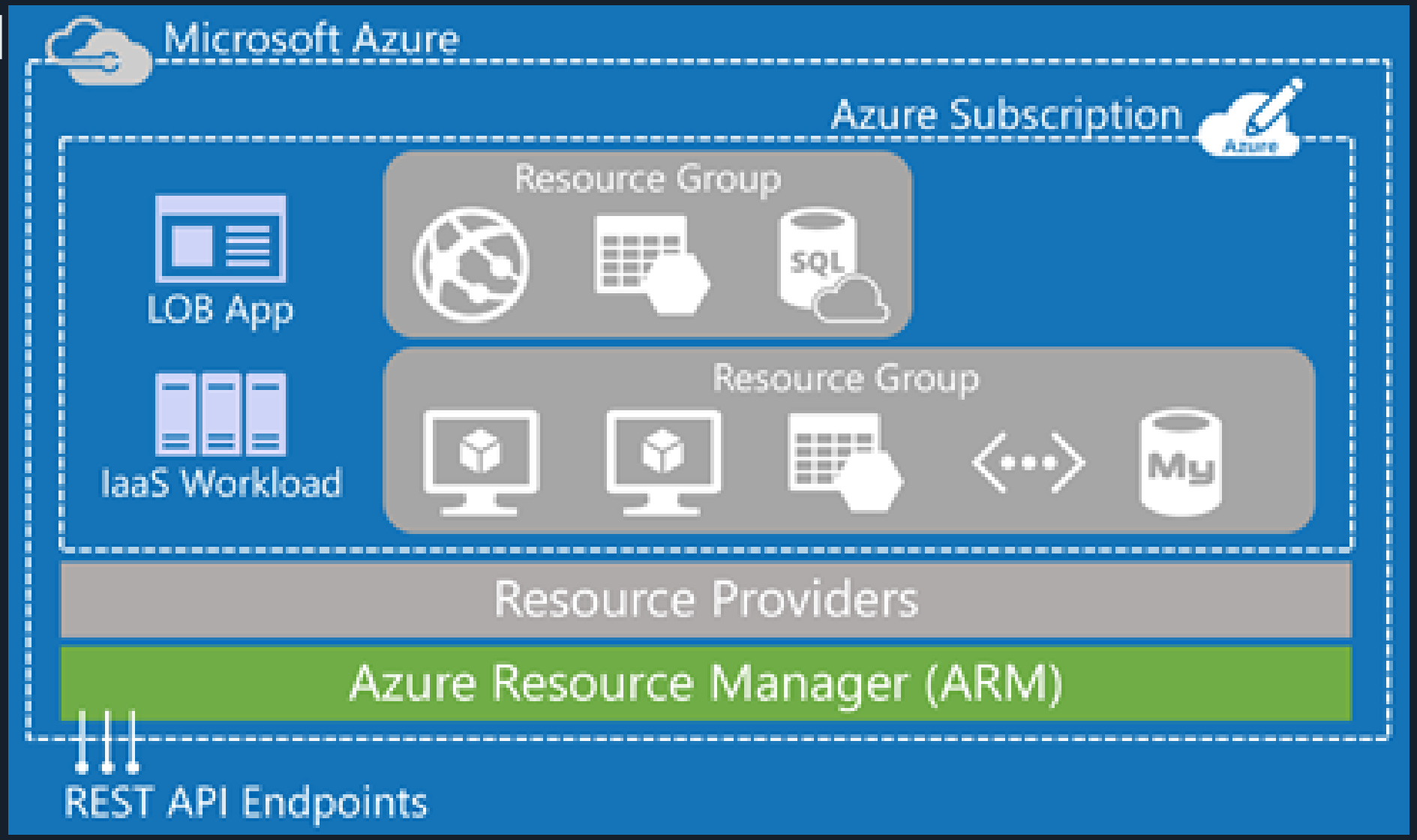
Resource - A manageable item that is available through Azure. Some common resources are a virtual machine, storage account, web app, database, and virtual network, but there are many more.

Resource Group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization.

Resource Provider - A service that supplies the resources you can deploy and manage through Resource Manager. Each resource provider offers operations for working with the resources that are deployed. Some common resource providers are Microsoft.Compute, which supplies the virtual machine resource, Microsoft.Storage, which supplies the storage account resource, and Microsoft.Web, which supplies resources related to web apps.

Resource Manager template - A JavaScript Object Notation (JSON) file that defines one or more resources to deploy to a resource group. It also defines the dependencies between the deployed resources. The template can be used to deploy the resources consistently and repeatedly.

ARM



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Introducción a PowerShell

INTRODUCCIÓN: ¿QUÉ ES?

Windows PowerShell

```
PS C:\Users\amarquez>
```

- Un entorno interactivo orientado a objetos que usa programas llamados cmdlets para tareas de configuración y administración.

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INTRODUCCIÓN: ¿QUÉ ES?

Windows PowerShell

```
PS C:\Users\amarquez>
```

- Es mejor preguntar ¿cómo puede ayudarme?

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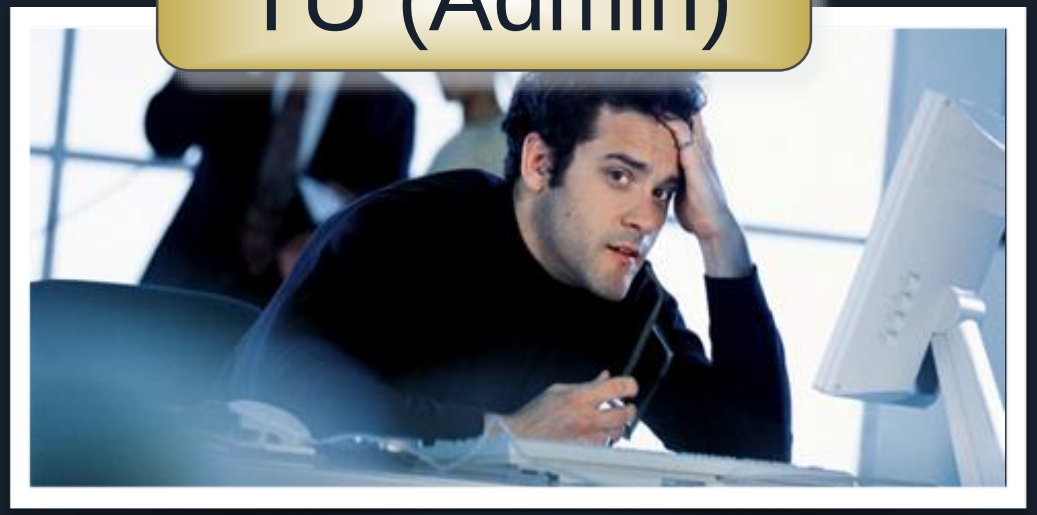
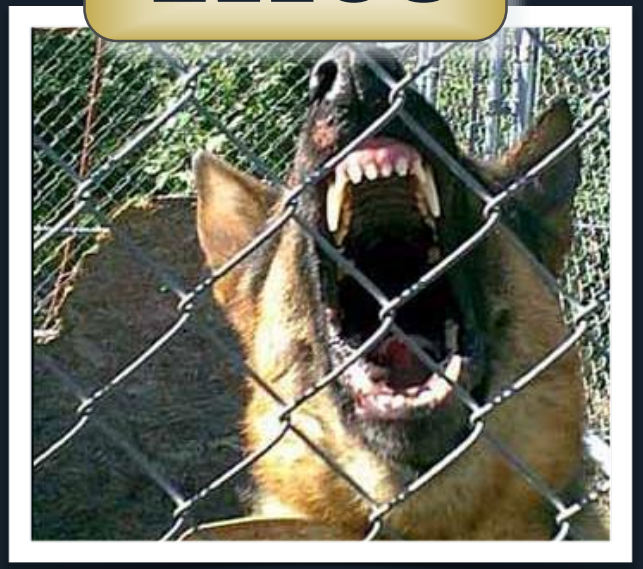
INTRODUCCIÓN ¿CÓMO PUEDE AYUDARME?

TÚ (Admin)



ELLOS



- Mejora de la gestión y automatización
- Gestión en tiempo real
- Gestión a gran escala

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PREPÁRATE: DESPLIEGUE

Instalar **Windows PowerShell 5.0**

Windows 10 or Windows Server 2016

Parte de Windows Management Framework (WMF) 5.0 incluído en Windows.

Windows 7 y Windows Server 2008 R2

Instalar Microsoft .NET Framework 4.5 (dotNetFx45_Full_setup.exe) desde el Microsoft Download Center en http://go.microsoft.com/fwlink/?LinkID=242919

Instalar Windows Management Framework 5.1 desde el Microsoft Download Center en https://www.microsoft.com/en-us/download/details.aspx?id=54616

INTRODUCCIÓN - VERSIONES

Instalando PowerShell – Windows Management Framework

PowerShell V5 – Windows 10 and Server 2016
PowerShell V4 – Windows 8.1 and Server 2012 R2
PowerShell V3 – Windows 8 and Server 2012
PowerShell V2 – Windows 7 and Server 2008
*Windows 7/Server 2008 pueden ejecutar PowerShell V3+:

Download the Windows Management Framework 3.0 at
http://www.microsoft.com/en-us/download/details.aspx?id=34595

*Windows XP y Server 2003 pueden ejecutar PowerShell V2

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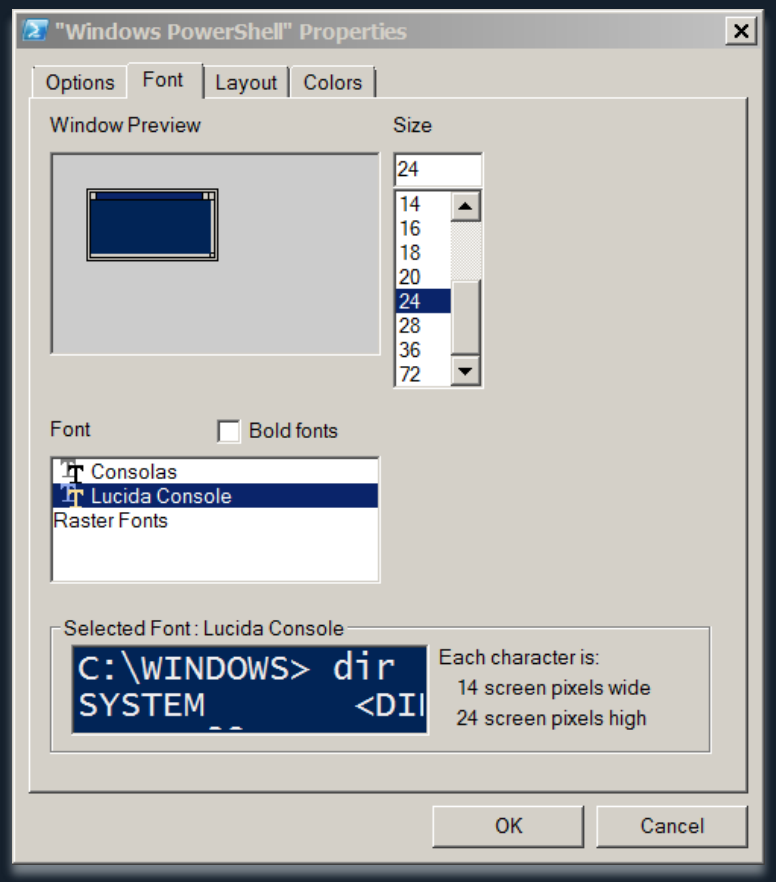
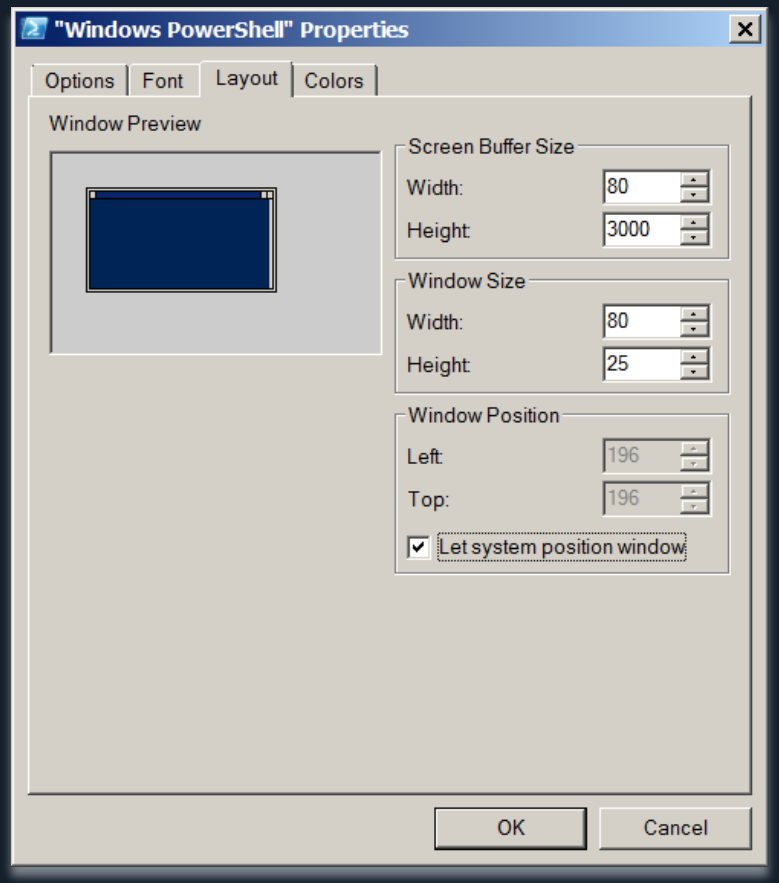
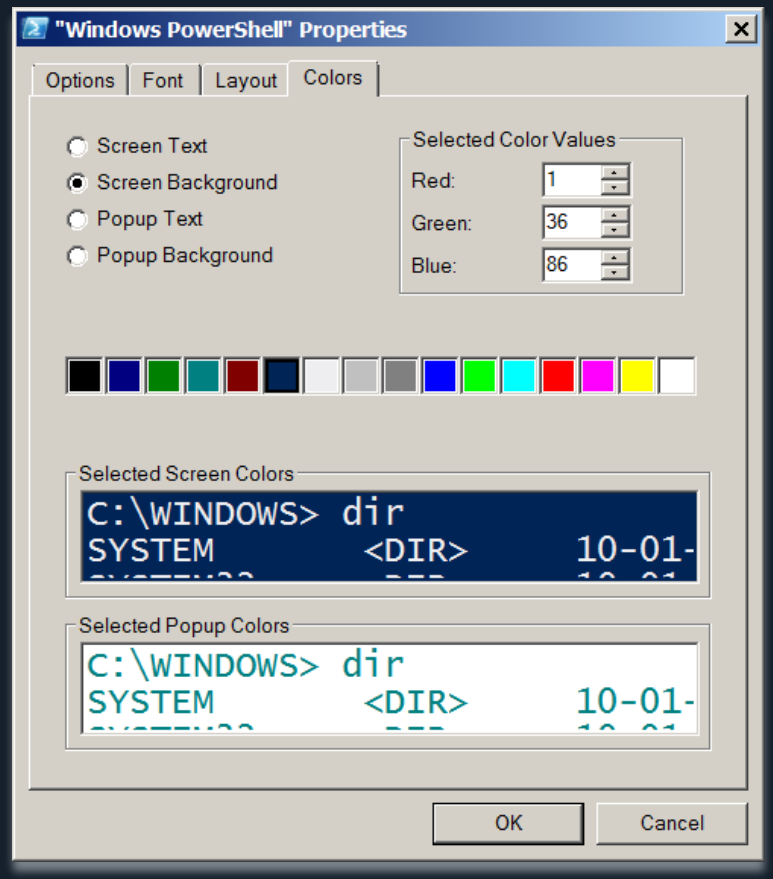
INTRODUCCIÓN - PERSONALIZACIÓN







INTRODUCCIÓN – CONCEPTOS BÁSICOS

Familiarizándonos con la consola

- Cmdlets : Verbo – Sustantivo
- ¡Los comandos nativos funcionan!
  - Ping, IPConfig, calc, notepad, mspaint
- cls - Clear-Host
- cd - Set-Location
- dir, ls - Get-Childitem
- type, cat - Get-Content
- Copy, cp - Copy-item

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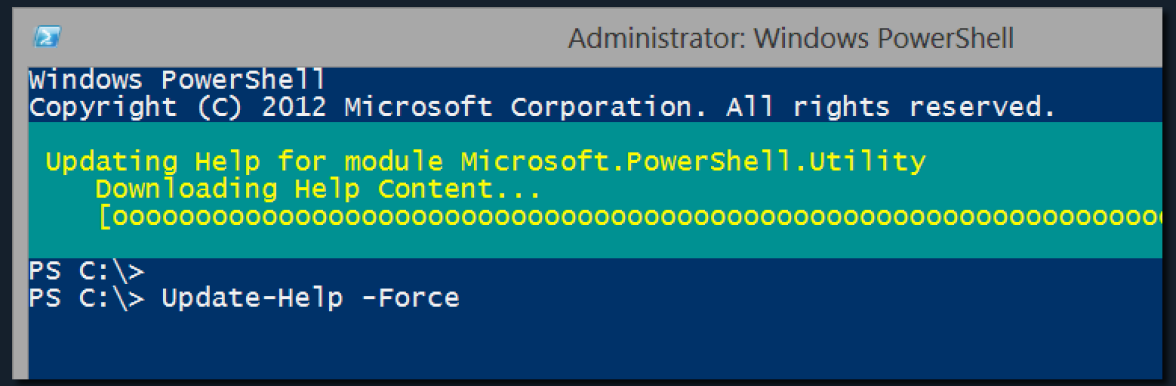
Introducción a PowerShell

La Ayuda

LA AYUDA

¿Por qué necesitamos la ayuda?

- No memorices – ¡Descubre!
- Miles de cmdlets – todos tienen ayuda
- Información avanzada
- Siempre actualizada. Podemos guardar la ayuda de manera local con Save-Help (ps 3.0+)



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LA AYUDA

Get-Help, help y man

Help <cmdlet>

Help *parcial*

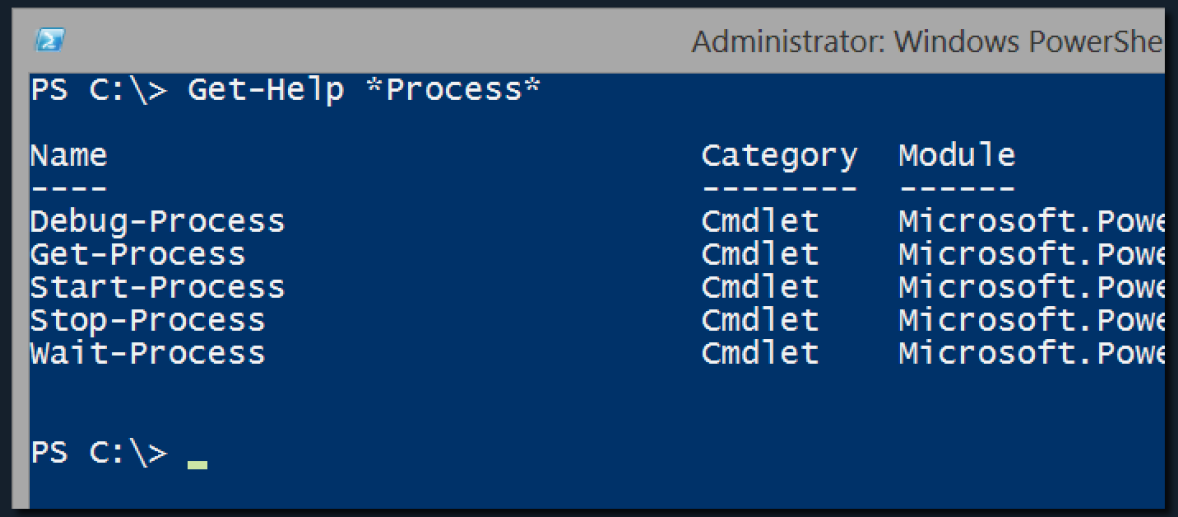
Help <cmdlet> -Full

Help <cmdlet> -Online

Help <cmdlet> -ShowWindow

Help <cmdlet> -Examples

Get-Help About_*



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LA AYUDA

Entendiendo la sintaxis

- Grupos de parámetros

```
SYNTAX
    Get-ChildItem [[-Path] <string[]>] [[-Filter] <string>] [-Exclude <string[]
    >] [-Force] [-Include <string[]>] [-Name] [-Recurse] [-UseTransaction] [<Co
    mmonParameters>]

    Get-ChildItem [-LiteralPath] <string[]> [[-Filter] <string>] [-Exclude <str
    ing[]>] [-Force] [-Include <string[]>] [-Name] [-Recurse] [-UseTransaction]
     [<CommonParameters>]
```

- El significado de la sintaxis

```
SYNTAX
    Get-Service [[-Name] <string[]>] [-ComputerName <string[]>] [-DependentServ
    ices] [-Exclude <string[]>] [-Include <string[]>] [-RequiredServices] [<Com
    monParameters>]
```

- Indica un parámetro
<> Indica argumentos

[] El argumento acepta múltiples valores

[Param] es posicional
[Param Arg] es opcional

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LA AYUDA

Administrator: Windows PowerShell

```
PS C:\> Get-Help *Service*
PS C:\> Get-Help *process*
PS C:\> Get-Help *Computer*
PS C:\> Get-Help Get-Adcomputer -Full
PS C:\> Get-Help Get-ADUser -ShowWindow
PS C:\>
```

Get-ADUser Help

Find: Previous Next

```
Synopsis
    Gets one or more Active Directory users.

Syntax
    Get-ADUser [-AuthType <ADAuthType>] [-Credential
<PSCredential>] [-Properties <String[]>] [-ResultPageSize <Int3
[-ResultSetSize <Int32>] [-SearchBase <String>] [-SearchScope
<ADSearchScope>] [-Server <String>] -Filter <String>
[<CommonParameters>]

    Get-ADUser [-Identity] <ADUser> [-AuthType <ADAuthType>] [
Credential <PSCredential>] [-Partition <String>] [-Properties
<String[]>] [-Server <String>] [<CommonParameters>]

    Get-ADUser [-AuthType <ADAuthType>] [-Credential
<PSCredential>] [-Properties <String[]>] [-ResultPageSize <Int
```

Herramientas de administración remota del servidor para Windows 8.1
http://www.microsoft.com/es-es/download/details.aspx?id=39296

plain concepts

Introducción a PowerShell

Tuberías (Pipes)

EL SISTEMA DE TUBERÍAS

El carácter para las tuberías es el AltGr+1

|

Conecta cmdlets para conseguir resultados más útiles

```
PS C:\> Get-Service | Select-Object name, status | Sort-Object name
```

Puede ser dividido en varias líneas para facilitar su lectura

```
PS C:\> Get-Service |
>> Select-Object name, status |
>> Sort-Object name
```

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EL SISTEMA DE TUBERÍAS

Cambiando la visualización de datos en consola

Administrator: Windows PowerShell

```
Windows PowerShell
Copyright (C) 2013 Microsoft Corporation. All rights reserved.

PS C:\Windows\system32> ls | format-table


    Directory: C:\Windows\system32


Mode                LastWriteTime     Length Name
----                -------------     ------ ----
d----        18/03/2014     10:30            0409
d----        03/02/2015      0:00            1033
d----        22/08/2013     17:36            AdvancedInstallers
d----        22/08/2013     17:36            AppLocker
d----        31/01/2015     14:24            appraiser
d----        18/03/2014     11:17            ar-SA
d----        16/02/2015     13:18            BestPractices
d----        18/03/2014     11:17            bg-BG
d----        31/01/2015     18:13            Boot
d----        22/08/2013     17:36            Bthprops
d----        02/02/2015     23:56            catroot
d----        03/03/2015      9:58            catroot2
d----        31/01/2015     14:24            CodeIntegrity
d----        18/03/2014     10:30            Com
d---s        31/01/2015     14:24            CompatTel
```

Admi

```
PS C:\Windows\system32> ls | format-list


    Directory: C:\Windows\system32



Name           : 0409
CreationTime   : 18/03/2014 10:30:52
LastWriteTime  : 18/03/2014 10:30:52
LastAccessTime : 18/03/2014 10:30:52

Name           : 1033
CreationTime   : 02/02/2015 23:59:42
LastWriteTime  : 03/02/2015 0:00:31
LastAccessTime : 03/02/2015 0:00:31

Name           : AdvancedInstallers
CreationTime   : 22/08/2013 15:36:16
LastWriteTime  : 22/08/2013 17:36:41
LastAccessTime : 22/08/2013 17:36:41

Name           : AppLocker
```

EL SISTEMA DE TUBERÍAS

Exportando/Importando CSV

Administrator: Windows PowerShell

```
PS C:\>
PS C:\> Get-Process | export-csv c:\Proc.csv
PS C:\> notepad c:\proc.csv
PS C:\>
```

Proc.csv - Notepad

File Edit Format View Help

```
#TYPE System.Diagnostics.Process
"__NounName","Name","Handles","VM","WS","PM","NPM","Path","Company","CPU","Fi
"Process","coherenc e","50","19222528","2859008","864256","5424","C:\Program
"Process","coherence","50","39010304","2957312","876544","5296","C:\Program F
"Process","coherence","40","41709568","2764800","798720","6000","C:\Program F
"Process","conhost","89","78626816","7950336","2347008","8528","C:\Windows\sy
"Process","csrss"
"Process","csrs
```

Administrator: Windows PowerShell

```
PS C:\> import-csv c:\proc.csv


__NounName                  : Process
Name                        : coherence
Handles                     : 52
VM                          : 19222528
WS                          : 2801664
PM                          : 876544
NPM                         : 5424
Path                        : C:\Program Files (x86)\Parallels\Parallels Tools\S
                              ervices\coherence.exe
```

plain concepts

EL SISTEMA DE TUBERÍAS

Exportando/Importando XML

Administrator: Windows PowerShell

```
PS C:\> Get-Process | Export-Clixml c:\ref.xml
PS C:\>
```

Administrator: Windows PowerShell

```
PS C:\> Compare-Object -ReferenceObject (Import-Clixml c:\ref.xml) -DifferenceOb
ject (Get-Process) -Property name

name                                    SideIndicator
----                                    -------------
notepad                                 =>


PS C:\>
```

EL SISTEMA DE TUBERÍAS

Otros ficheros y salidas

Administrator: Windows PowerShell

```
PS C:\>
PS C:\> Get-Service > C:\serv.txt
PS C:\> Get-Service | Out-File c:\serv2.txt
PS C:\> Get-Service | Out-Printer
PS C:\> Notepad c:\serv.txt
PS C:\> Notepad c:\serv2.txt
PS C:\>
```

serv.txt - Notepad

File Edit Format View Help

```
Status   Name               DisplayName
------   ----               -----------
Running  ADWS               Active Directory Web Services
Stopped  AeLookupSvc        Application Experience
Stopped  ALG                Application Layer Gateway Service
```

serv2.txt - Notepad

File Edit Format View Help

```
Status   Name               DisplayName
------   ----               -----------
Running  ADWS               Active Directory Web Services
Stopped  AeLookupSvc        Application Experience
Stopped  ALG                Application Layer Gateway Service
```

plain concepts

EL SISTEMA DE TUBERÍAS

Mostrando información en la GUI

Administrator: Windows PowerShell

```
PS C:\>
PS C:\> Get-process | Out-GridView
Out-GridView
```

get-process | Out-GridView

Filter

Add criteria

Handles	NPM(K)	PM(K)	WS(K)	VM(M)	CPU(s)	Id	ProcessName
52	5	856	2,736	18	0.02	1,500	coherence
51	5	868	2,856	37	0.03	2,364	coherence
40	6	796	2,708	40	0.02	2,372	coherence
42	6	1,724	4,564	56	0.13	2,144	conhost
38	5	1,556	3,924	46	0.06	2,248	conhost
458	12	1,896	4,152	47	0.20	320	csrss
235	13	20,220	14,292	63	7.91	384	csrss
195	19	4,716	11,436	58	1.28	1,328	dfsrs
123	13	2,392	6,072	40	0.09	1,800	dfssvc
2,652	3,652	46,116	47,264	91	1.08	1,364	dns
70	7	1,704	4,824	53	0.05	2,664	dwm
667	48	30,760	46,040	197	3.27	2,696	explorer
0	0	0	24	0		0	Idle
103	14	3,104	5,444	40	0.11	1,392	ismserv
1,069	85	22,568	27,344	364	5.72	492	lsass
147	7	2,064	3,904	17	0.06	500	lsm

get-service | Out-GridView

Filter

Add criteria

Status	Name	DisplayName
Running	ADWS	Active Directory Web Services
Stopped	AeL...	Application Experience
Stopped	ALG	Application Layer Gateway...
Stopped	App...	Application Identity
Stopped	App...	Application Information
Stopped	App...	Application Management
Stopped	asp...	ASP.NET State Service
Running	Aud...	Windows Audio Endpoint B...
Running	Aud...	Windows Audio

EL SISTEMA DE TUBERÍAS

Mostrando información en formato HTML

Administrator: Windows PowerShell

```
PS C:\>
PS C:\> Get-Service | Export-Csv c:\serv.csv
PS C:\> Get-Service | ConvertTo-Csv | Out-File c:\serv.csv
PS C:\>
PS C:\> Get-Service | ConvertTo-Html -Property Displayname, status |
>> Out-File c:\serv.htm
>>
PS C:\>
```

HTML TABLE - Windows Internet Explorer

C:\serv.htm

HTML TABLE

Displayname	status
Active Directory Web Services	Running
Application Experience	Stopped
Application Layer Gateway Service	Stopped
Application Identity	Stopped
Application Information	Stopped
Application Management	Stopped

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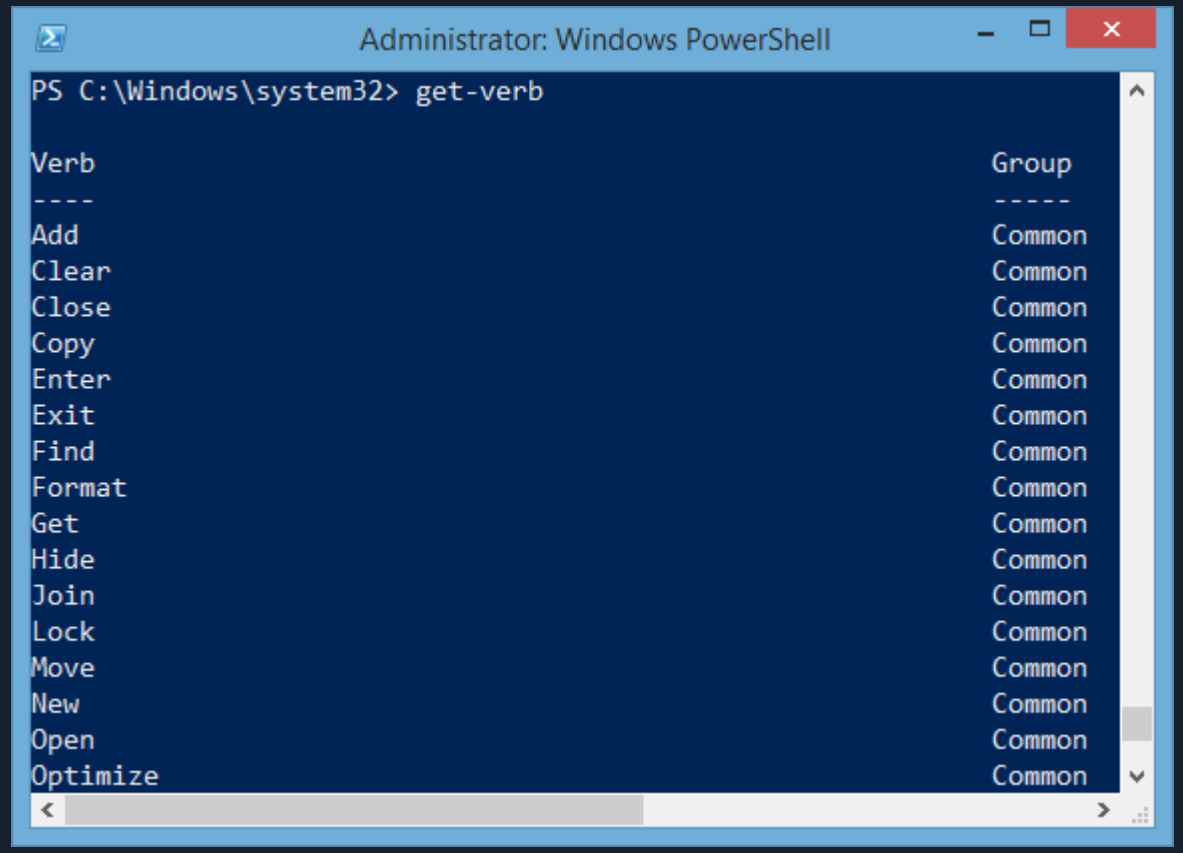
Introducción a PowerShell

Commandlets útiles (cmdlets)

COMMANDLETS

- Son el corazón del funcionamiento de PowerShell
- Se pueden importar nuevos cmdlets con el uso de módulos
- Normalmente se pueden encadenar en tuberías
- Su nomenclatura suele ser “Verbo-Nombre”
- La lista de verbos recomendados se puede consultar con “Get-Verb”



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COMMANDLETS INTERESANTES

- Get-ChildItem (ls)
- Show-Command (v3)
- Get-Command
- Get-Process
- Get-Member
- $_
- Where-Object
- Get-Service
- Group-Object
- Get-Eventlog

Administrator: Windows PowerShell

```
PS C:\Windows\system32> get-command -name *set-vm*

CommandType     Name                                               ModuleName
-----------     ----
Cmdlet          Reset-VMRepli
Cmdlet          Reset-VMResou
Cmdlet          Set-VM
Cmdlet          Set-VMBios
```

Administrator: Windows PowerShell

```
PS C:\Windows\system32> Get-Process | Where-Object {$_.Name -eq "chrome"}

Handles  NPM(K)    PM(K)      WS(K) VM(M)   CPU(s)     Id ProcessName
-------  ------    -----      ----- -----   ------     -- -----------
                                                   1,30    492 chrome
                                                   1,44   1316 chrome
                                                  75,75   2032 chrome
                                                 632,80   2540 chrome
                                                   0,80   2652 chrome
                                                   3,52   3768 chrome
                                                   1,78   4684 chrome
```

Administrator: Windows PowerShell

```
PS C:\Windows\system32> Get-Service | Group-Object status

Count Name                      Group
----- ----                      -----
   96 Running                   {AdobeARMservice, AlienFusionService, Appinfo,
  107 Stopped                   {AeLookupSvc, ALG, AppIDSvc, AppMgmt...}

PS C:\Windows
```

Administrator: Windows PowerShell

```
PS C:\Windows\system32> Get-EventLog system

  Index Time          EntryType   Source                 InstanceID Message
  ----- ----          ---------   ------                 ---------- -------
   4602 mar. 03 23:45 Information Microsoft-Windows...           12 El proceso C:\Windows\System32\svchost.exe (ide..
   4601 mar. 03 23:21 Information Service Control M...   1073748864 El tipo de inicio del servicio Instalador de mó..
   4600 mar. 03 23:21 Information Service Control M...   1073748869 Se instaló un servicio en el sistema....
   4599 mar. 03 23:21 Information Service Control M...   1073748869 Se instaló un servicio en el sistema....
   4598 mar. 03 23:17 Information Microsoft-Windows...            1 No se encontró la descripción del id. de evento..
   4597 mar. 03 23:17 Information Microsoft-Windows...            1 No se encontró la descripción del id. de evento..
```

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COMMANDLETS PELIGROSOS…

… y sus salvavidas correspondientes

- Stop-Process | kill
- Stop-service
- Remove-Item

- -Confirm
- -Whatif
- $WhatIfPreference

```
PS C:\> Remove-Item c:\serv.htm -WhatIf
What if: Performing operation "Remove File" on Target "C:\serv.htm".
```

```
PS C:\> Remove-Item c:\serv.htm -Confirm

Confirm
Are you sure you want to perform this action?
Performing operation "Remove File" on Target "C:\serv.htm".
[Y] Yes  [A] Yes to All  [N] No  [L] No to All  [S] Suspend  [?] Help
(default is "Y"):
```

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PowerShell Core

La clave son los objetos

LA CLAVE SON LOS OBJETOS

- Todo en PowerShell son objetos
- Los objetos pueden tener propiedades y/o métodos
- Los resultados de un cmdlet pueden moverse entre cmdlets
- Generalmente se usa la técnica de inclusion (Un objeto tiene otros objetos) para representar datos más complejos

Administrator: Windows PowerShell NP

```
PS C:\> Get-Process | Get-Member


   TypeName: System.Diagnostics.Process

Name                       MemberType     Definition
----                       ----------     ----------
Handles                    AliasProperty  Handles = Handlec
Name                       AliasProperty  Name = ProcessNam
NPM                        AliasProperty  NPM = NonpagedSys
PM                         AliasProperty  PM = PagedMemoryS
VM                         AliasProperty  VM = VirtualMemor
WS                         AliasProperty  WS = WorkingSet
Disposed                   Event          System.EventHandl
ErrorDataReceived          Event          System.Diagnostic
Exited                     Event          System.EventHandl
OutputDataReceived         Event          System.Diagnostic
BeginErrorReadLine         Method         System.Void Begin
BeginOutputReadLine        Method         System.Void Begin
CancelErrorRead            Method         System.Void Cance
CancelOutputRead           Method         System.Void Cance
Close                      Method         System.Void Close
CloseMainWindow            Method         bool CloseMainWin
CreateObjRef               Method         System.Runtime.Re
Dispose                    Method         System.Void Dispo
```

plain concepts

LA CLAVE SON LOS OBJETOS

Los objetos pueden fluir a través de las tuberías

```
PS C:\> Get-Service | Select-Object name, status
```

```
Status   Name               DisplayName
------   ----               -----------
Running  AdobeARMservice    Adobe Acrobat Update Service
Running  ADWS               Active Directory Web Services
Stopped  AeLookupSvc        Application Experience
Stopped  ALG                Application Layer Gateway Service
Stopped  AllUserInstallA... Windows All-User Install Agent
```

```
Name                     Status
----                     ------
AdobeARMservice          Running
ADWS                     Running
AeLookupSvc              Stopped
ALG                      Stopped
AllUserInstallAgent      Stopped
AppHostSvc               Running
AppIDSvc                 Stopped
Appinfo                  Stopped
AppMgmt                  Stopped
aspnet_state             Stopped
```

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LA CLAVE SON LOS OBJETOS

- Get-Member (gm)
  - TypeName es un nombre único asignado por Windows
- Muestra las propiedades y métodos de un objeto
  - Las propiedades son columnas de información del objeto
  - Los métodos son las acciones que puede realizar el objeto

Administrator: Windows PowerShell NP

```
PS C:\> Get-Process | Get-Member


   TypeName: System.Diagnostics.Process

Name                       MemberType     Definition
----                       ----------     ----------
Handles                    AliasProperty  Handles = Handlec
Name                       AliasProperty  Name = ProcessNam
NPM                        AliasProperty  NPM = NonpagedSys
PM                         AliasProperty  PM = PagedMemoryS
VM                         AliasProperty  VM = VirtualMemor
WS                         AliasProperty  WS = WorkingSet
Disposed                   Event          System.EventHandl
ErrorDataReceived          Event          System.Diagnostic
Exited                     Event          System.EventHandl
OutputDataReceived         Event          System.Diagnostic
BeginErrorReadLine         Method         System.Void Begin
BeginOutputReadLine        Method         System.Void Begin
CancelErrorRead            Method         System.Void Cance
CancelOutputRead           Method         System.Void Cance
Close                      Method         System.Void Close
CloseMainWindow            Method         bool CloseMainWin
CreateObjRef               Method         System.Runtime.Re
Dispose                    Method         System.Void Dispo
```

plain concepts

LA CLAVE SON LOS OBJETOS

Ordenando objetos

```
Administrator: Windows PowerShell NP
PS C:\> Get-Process | Sort-Object -Property cpu -Descending

Handles  NPM(K)    PM(K)      WS(K) VM(M)   CPU(s)     Id ProcessName
-------  ------    -----      ----- -----   ------     -- -----------
   1118      95    22128      28276   105     5.94    472 lsass
    297      42    46788      47112   555     3.73   1232 Microsoft.Activ
    165      13    18932      13392    59     3.30   1912 csrss
    552      39    19396      33752   183     2.83    912 explorer
    291      19     6472      11872    75     1.67   1204 spoolsv
    925      42    15284      28540   112     1.27    884 svchost
```

- Sort-Object ordena por propiedades.
- Usamos Get-Member para ver la lista de propiedades

```
Administrator: Windows PowerShell NP
PS C:\> dir -Path c:\windows -filter *.* |
>> Sort-Object -Property length -Descending
>>


    Directory: C:\windows


Mode                LastWriteTime     Length Name
----                -------------     ------ ----
-a---         2/24/2011  11:19 PM    2871808 explorer.exe
-a---          9/1/2011   3:18 PM    1618010 WindowsUpdate.log
-a---         7/13/2009   6:39 PM     733696 HelpPane.exe
-a---         7/13/2009   6:39 PM     427008 regedit.exe
-a---         6/10/2009   1:30 PM      73424 ServerEnterprise.xml
```

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LA CLAVE SON LOS OBJETOS

Seleccionando objetos

Administrator: Windows PowerShell NP

```
PS C:\> Get-Process | Select-Object -Property Name,ID,VM,PM |
>> ConvertTo-Html | Out-File c:\proc.htm
>>
PS C:\> Start c:\proc.htm
PS C:\>
```

- Select-Object selecciona propiedades
- Usamos Get-Member para ver que propiedades podemos seleccionar
- -first y -last restringe el número de filas mostradas

HTML TABLE - Windows Internet Explorer

C:\proc.htm

HTML TABLE

Name	Id	VM	PM
coherence	1424	19222528	876544
coherence	1924	39010304	876544
coherence	2016	41709568	802816
conhost	2592	44421120	1662976
csrss	316	45670400	1908736

LA CLAVE SON LOS OBJETOS

Propiedades personalizadas

Administrator: Windows PowerShell

```
PS C:\> Get-WmiObject win32_logicalDisk -filter "deviceID='c:'" |
>> Select-Object -Property __Server,
>> @{n='FreeGB';e={$_.Freespace /1Gb -as [int]}} |
>> Format-Table -AutoSize
>>

__SERVER  FreeGB
--------  ------
AKITAWIN8     43


PS C:\>
```

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LA CLAVE SON LOS OBJETOS

Filtrar objetos a la salida de tuberías

Administrator: Windows PowerShell

```
PS C:\> Get-Service | Where-Object -FilterScript { $_.status -eq 'Running' }

Status   Name               DisplayName
------   ----               -----------
Running  ADWS               Active Directory Web Services
Running  AudioEndpointBu... Windows Audio Endpoint Builder
Running  AudioSrv           Windows Audio
Running  BFE                Base Filtering Engine
Running  BITS               Background Intelligent Transfer Ser...
Running  CryptSvc           Cryptographic Services
```

Administrator: Windows PowerShell

```
PS C:\> gsv | ?{$_.status -eq 'Running'}

Status   Name               DisplayName
------   ----               -----------
Running  ADWS               Active Directory Web Services
Running  AudioEndpointBu... Windows Audio Endpoint Builder
Running  AudioSrv           Windows Audio
Running  BFE                Base Filtering Engine
Running  BITS               Background Intelligent Transfer Ser...
Running  CryptSvc           Cryptographic Services
```

LA CLAVE SON LOS OBJETOS

Operadores de comparación

- La comparación devuelve un Boolean: True o False
- La comparación puede ser sensible a mayúsculas con el prefijo ‘c’

Administrator: Windows PowerShell

```
PS C:\> 1 -eq 1
True
PS C:\> 2 -lt 1
False
PS C:\> "Hello" -eq "HELLO"
True
PS C:\> "Hello" -ceq "HELLO"
False
PS C:\> Get-Help About_Comparison_Operators
```

Administrator: Windows PowerShell

```
PS C:\> (Get-Date) -le '2012-12-02'
True
PS C:\> get-process | where-object {-not $_.Responding -eq $False}

Handles  NPM(K)    PM(K)      WS(K) VM(M)   CPU(s)     Id ProcessName
-------  ------    -----      ----- -----   ------     -- -----------
     50       5      836       2724    18     0.00   1500 coherence
     50       5      848       2776    37     0.00   2444 coherence
     40       6      780       2700    40     0.02   2452 coherence
```

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LA CLAVE SON LOS OBJETOS

Métodos – cuando no existe cmdlet

```
Administrator: Windows PowerShel
PS C:\> Get-Service bits | foreach{$_.stop()}
```

```
Administrator: Windows PowerShell
PS C:\> Get-WmiObject Win32_Service | gm

   TypeName: System.Management.ManagementObject#root\cimv2\Win32_Service

Name
----
Chang
Chang
Delet
```

```
Administrator: Windows PowerShell
PS C:\> Get-WmiObject Win32_Service | gm -Name change | fl definition

Definition : System.Management.ManagementBaseObject Change(System.String Displa
             yName, System.String PathName, System.Byte ServiceType, System.Byt
             e ErrorControl, System.String StartMode, System.Boolean DesktopInt
             eract, System.String StartName, System.String StartPassword, Syste
             m.String LoadOrderGroup, System.String[] LoadOrderGroupDependencie
```

```
Administrator: Windows PowerShell
PS C:\> Get-WmiObject win32_service -filter "name='bits'" |
>> ForEach-Object -Process {
>> $_.change($null,$null,$null,$null,$null,$null,"P@ssw0rd")}
```

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