

PowerShell Desired State Configuration for Linux

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- What is PowerShell and Desired State Configuration?
- Why would I use PowerShell for Linux?
- Review of Desired State Configuration
 - Server Setup
 - Client Setup
- Examples
 - Webserver Configuration
 - End to End Provisioning (Hyper-V to Webserver)
- Q/A

- PowerShell – task automation and management tool
 - Allow for both local and remote management
 - Scripting language
 - V1 shipped in 2006 as optional
 - V2 shipped with Win7 and Server 2008
 - V5 currently in preview (unless your on Win10?)

Reboot Local Machine:

Restart-Computer

Reboot Remote Machine:

Restart-Computer -ComputerName Server01

Reboot Remote Machines (multiple):

Restart-Computer -ComputerName Server01, Server02, localhost



- PowerShell Desired State Configuration was released to allow for deployment and management of configuration data
- Follows DMTF management standards and WS-Management Protocol

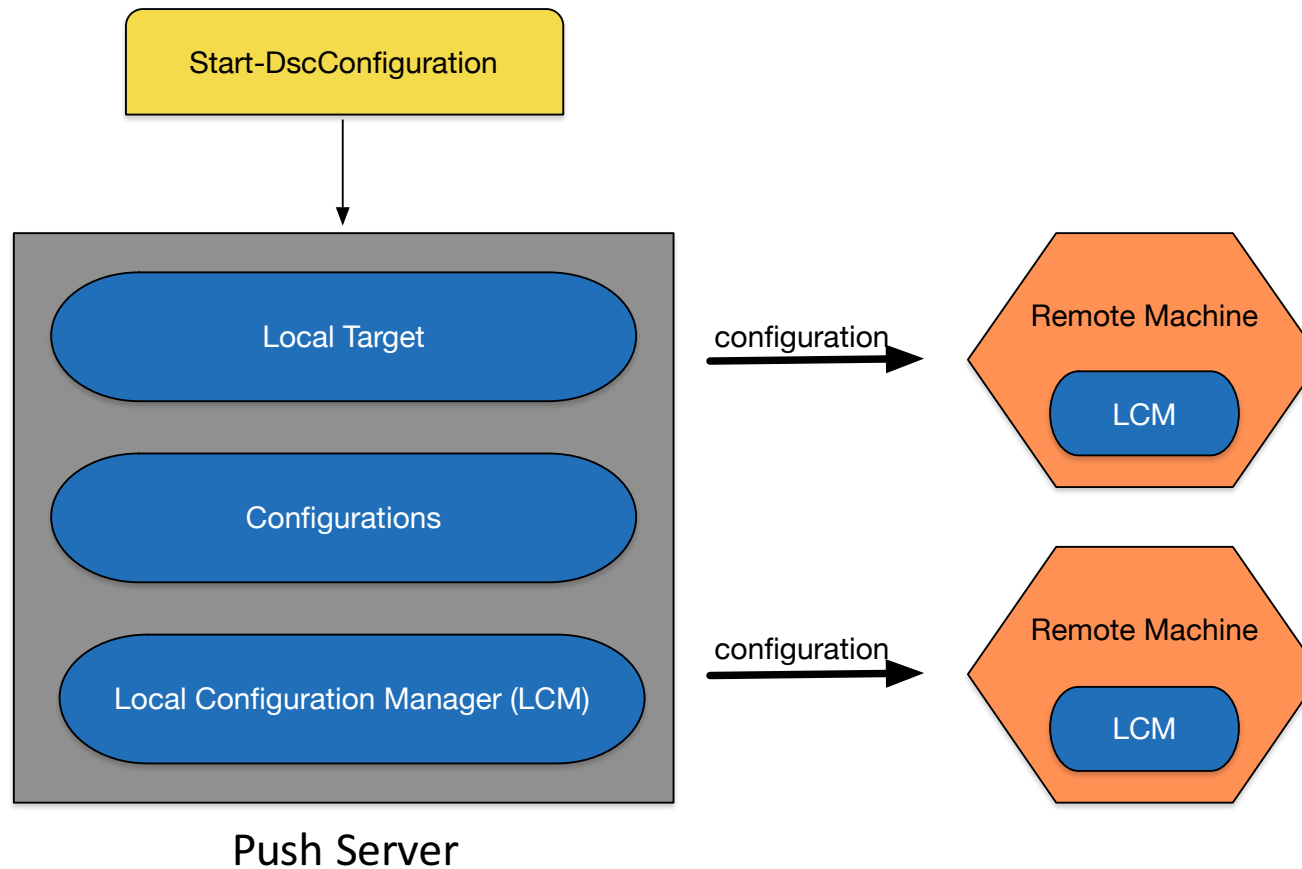
- Applications:
 - Server role/feature management
 - Setting/Changing registry items
 - Process/service management
 - User/Group Management
 - Software Deployment and setup
 - Remote script execution
 - Managing configuration drift
 - Actual configuration reporting

WHY NOT ONE OF THESE?

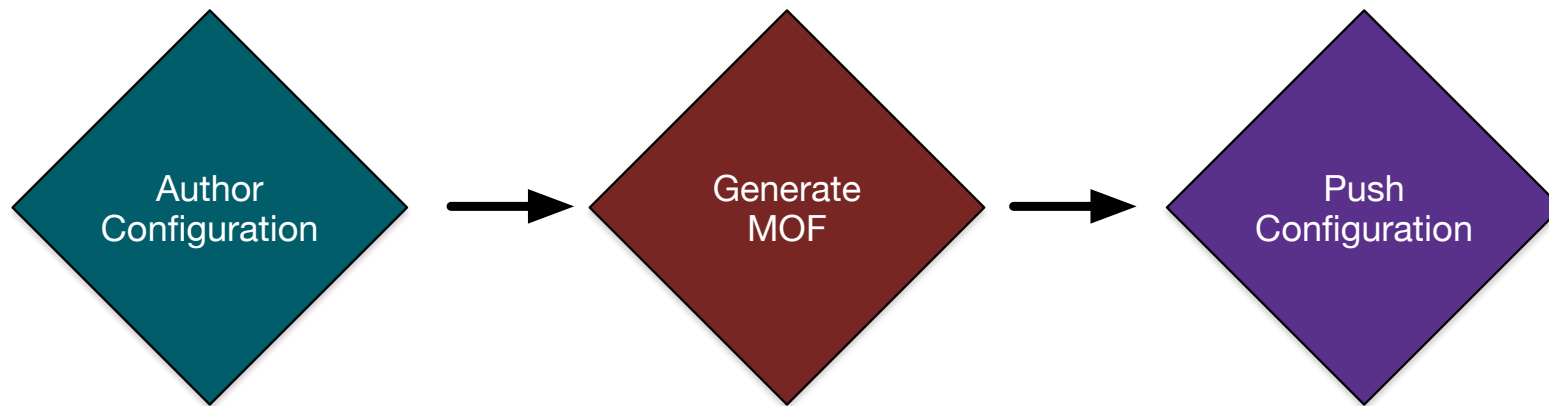


Because of this...

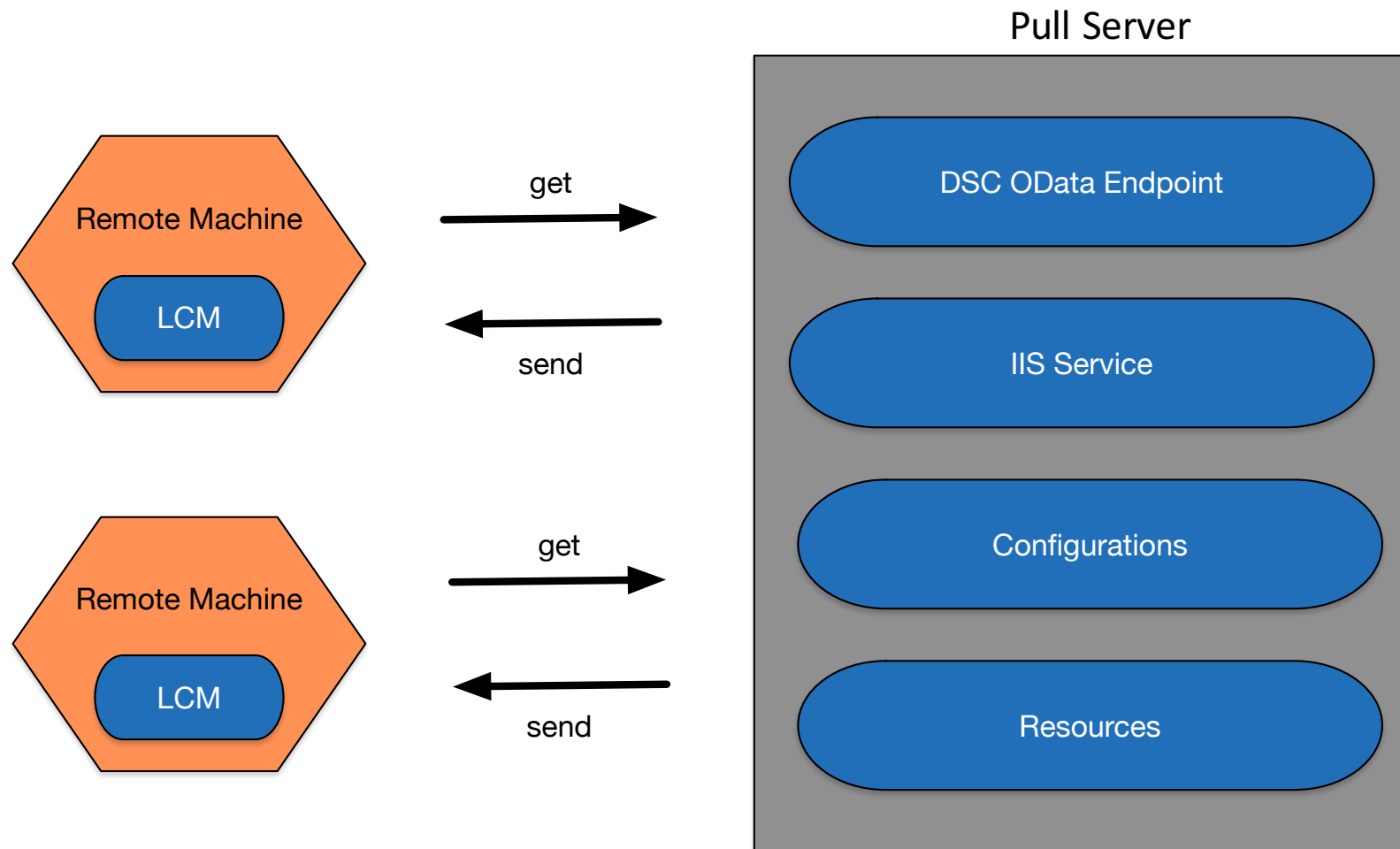




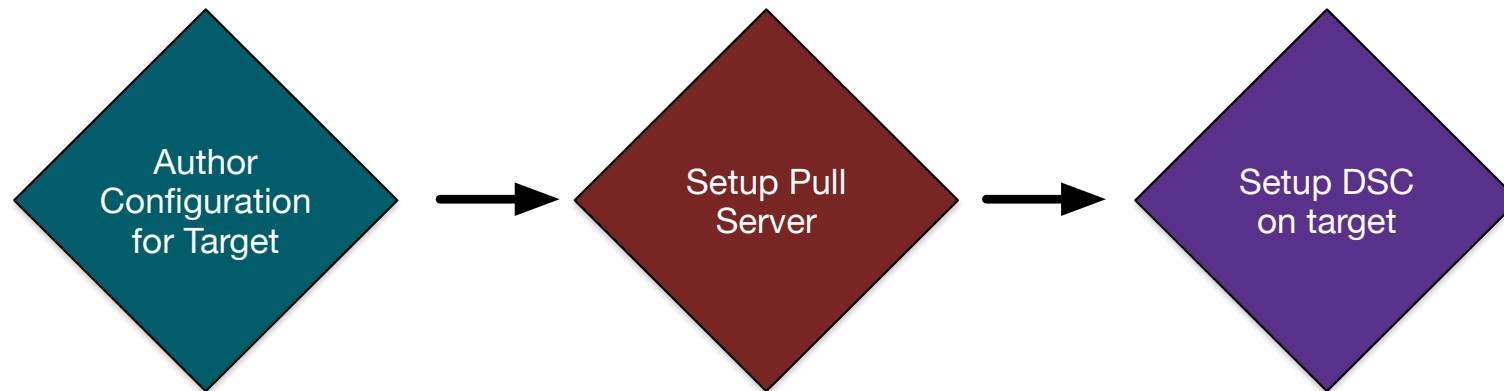
<http://blogs.msdn.com/b/powershell/archive/2013/11/26/push-and-pull-configuration-modes.aspx>



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Support Operating Systems

- CentOS 5, 6, & 7
- Debian GNU/Linux 6 & 7
- Oracle Linux 5, 6, & 7
- RHEL 5, 6, & 7
- SUSE 10, 11, & 12
- Ubuntu 12.04 LTS & 14.04 LTS

Required Packages:

- glibc
- python
- omniserver - Open Management Infrastructure
- openssl
- ctypes
- libcurl

DSC for Linux Binaries

<https://github.com/MSFTOSSMgmt/WPSDSCLinux>

DSC Resources – building blocks to DSC Configurations

Linux Resources

- nxFile – manages files and directory state
- nxScript – run script blocks on target nodes
- nxUser – manages linux users
- nxGroup – manages linux groups
- nxService – manages linux services (System-V, upstart, systemd)

Currently in beta but growing.

```
1 configuration Name{
2     node("Node1", "Node2", "Node3"){
3
4         WindowsFeature FriendlyName{
5             Ensure = "Present"
6             Name = "Feature Name"
7         }
8
9         File FriendlyName{
10            Ensure = "Present"
11            SourcePath = $SourcePath
12            DestinationPath = $DestinationPath
13            Type = "Directory"
14            DependsOn = "[WindowsFeature]FriendlyName"
15        }
16    }
17 }
18
19
```

← Servers installed on

← Force feature to be installed

← Adds file to OS

```
1 configuration FourthCoffee {
2     Import-DscResource -Module xWebAdministration
3
4     # Install the IIS role
5     WindowsFeature IIS {
6         Ensure      = "Present"
7         Name        = "Web-Server"
8     }
9
10    # Copy the website content
11    File WebContent {
12        Ensure      = "Present"
13        SourcePath  = "C:\Program Files\WindowsPowerShell\Modules\xWebAdministration\BakeryWebsite"
14        DestinationPath = "C:\inetpub\FourthCoffee"
15        Recurse     = $true
16        Type        = "Directory"
17        DependsOn  = "[WindowsFeature]IIS"
18    }
19
20    # Create a new website
21    xWebsite BakeryWebSite {
22        Ensure      = "Present"
23        Name        = "FourthCoffee"
24        State       = "Started"
25        PhysicalPath = "C:\inetpub\FourthCoffee"
26        DependsOn  = "[File]WebContent"
27    }
28 }
29
```

DEMO

- Most corporate environments use Hyper-V or VMWare
- Hyper-V has DSC Resources (form MS)
- VMWare Powershell tools (requires custom DSC Resource)
- Just requires that you have built a VM with all pre-reqs
 - Hyper-V and PS DSC for Linux support the same operating services
- Once VM is deployed you can use DSC push server to do initial setup




```

1 Configuration HyperV_VM {
2
3     param (
4         [Parameter(Mandatory)]
5         [string]$VMName,
6
7         [Parameter(Mandatory)]
8         [string]$baseVhdPath,
9
10        [Parameter(Mandatory)]
11        [string]$ParentPath,
12
13        [Parameter(Mandatory)]
14        [string]$VMSwitchName
15    )
16
17    Import-DscResource -module xHyper-V
18
19    xVMSwitch switch {
20        Name = $VMSwitchName
21        Ensure = 'Present'
22        Type = 'Internal'
23    }
24

```

```

24
25    xVHD DiffVHD {
26        Ensure = 'Present'
27        Name = $VMName
28        Path = $baseVhdPath
29        ParentPath = $ParentPath
30        Generation = 'vhdx'
31    }
32
33    xVMHyperV CreateVM {
34        Name = $VMName
35        SwitchName = $VMSwitchName
36        VhdPath = Join-Path -Path $baseVhdPath -ChildPath "$VMName.vhdx"
37        ProcessorCount = 1
38        MaximumMemory = 2GB
39        MinimumMemory = 512MB
40        RestartIfNeeded = 'True'
41        DependsOn = '[xVHD]DiffVHD', '[xVMSwitch]switch'
42        State = 'Running'
43        Generation = 'vhdx'
44    }
45 }
46

```

<http://mikefrobbins.com/2015/01/22/creating-hyper-v-vm-with-desired-state-configuration/>

- DSC Provides a new set of tools for machine configuration
- Allows integration with current Windows SysAdmin toolset
- Hyper-V and VMWare end to end provision capabilities
- A new tool to manage servers

