



M365DSC

One Tool For All Your Tenant Workloads

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Agenda

- Basic Concepts of PowerShell DSC
- M365DSC – What It is
- M365DSC – Possible Use Cases
- M365DSC – In Action (*Demo*)
- AzureDevOps Integration for CI/CD



PowerShell DSC

Basic Concepts

The Beginning



It's a management platform built-in Windows PowerShell 4.0 and above
(Windows OS life-cycle)



It's using a ***declarative*** approach as alternative of standard PowerShell coding (***imperative***)



It helps IT Administrators to automate configuration for Windows and Linux OS
(Linux Not Native)



It's supported across multiple Azure Services



PSDesiredStateConfiguration v1.0 - Windows PowerShell 4.0
PSDesiredStateConfiguration v1.1 - Windows PowerShell 5.1
PSDesiredStateConfiguration v2.0 - PowerShell 7.0 (.NET Core)
PSDscResources v3.0 - PowerShell 7.2+ (.NET Core)
...



Imperative vs Declarative syntax



```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled3.ps1* X
1 Import-Module ServerManager
2
3 #Check and install ASP.NET 4.5 feature
4 If (-not (Get-WindowsFeature "Web-Asp-Net45").Installed) {
5     try {
6         Add-WindowsFeature Web-Asp-Net45
7     }
8     catch {
9         Write-Error $_
10    }
11 }
12
13 #Check and install Web Server Feature
14 If (-not (Get-WindowsFeature "Web-Server").Installed) {
15     try {
16         Add-WindowsFeature Web-Server
17     }
18     catch {
19         Write-Error $_
20    }
21 }
22
23 #Create a new website
24 Add-PSSnapin WebAdministration
25 New-Website -Name MyWebsite -Port 80 -HostHeader MyWebsite -PhysicalPath "$env:systemdrive\"
26
27 #Start the website
28 Start-Website -Name MyWebsite
```

Imperative

```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled2.ps1* X
1 Configuration WebsiteConfig
2 {
3     Node MywebServer
4     {
5         WindowsFeature IIS
6         {
7             Ensure = "Present"
8             Name = "Web-Server"
9         }
10
11         WindowsFeature ASP
12         {
13             Ensure = "Present"
14             Name = "Web-Asp-Net45"
15         }
16
17         Website MyWebsite
18         {
19             Ensure = "Present"
20             Name = "Mywebsite"
21             PhysicalPath = "C:\Inetpub\MyWebsite"
22             State = "Started"
23             Protocol = @("http")
24             BindingInfo = @("*:80:")
25         }
26     }
27 }
```

Declarative



Desired State Configuration Push Model Phases

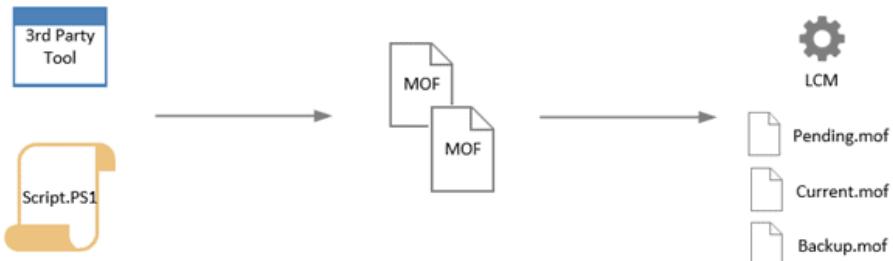


Figure2 -Push management model

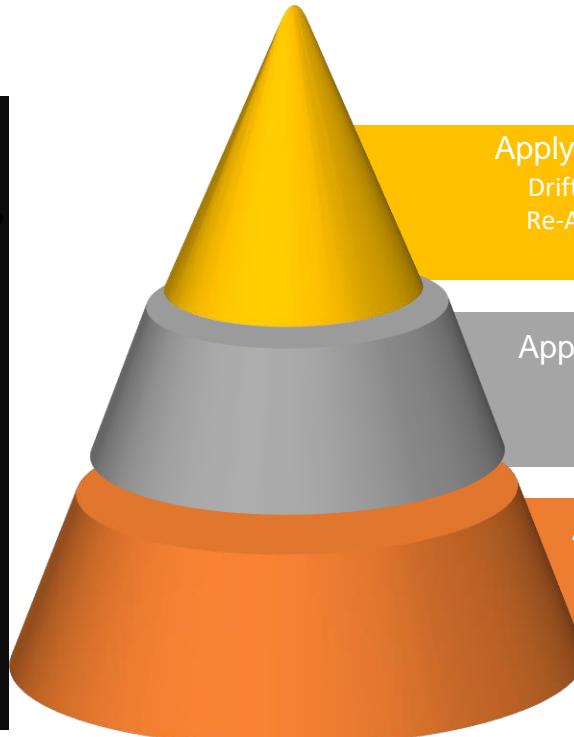


Local Configuration Manager (LCM) Mode

```
PS C:\Users\matte> Get-DscLocalConfigurationManager

ActionAfterReboot      : ContinueConfiguration
AgentId                : 5B9461F2-B77F-11EC-8A13-049226BE6849
AllowModuleOverWrite   :
CertificateID          :
ConfigurationDownloadManagers  : {}
ConfigurationID         :
ConfigurationMode       : ApplyAndMonitor
ConfigurationModeFrequencyMins : 15
Credential              :
DebugMode               :
DownloadManagerCustomData  :
DownloadManagerName     :
LCMCompatibleVersions   : {1.0, 2.0}
LCMState                : Busy
LCMStateDetail          : LCM is performing a consistency check.
LCMVersion              : 2.0
StatusRetentionTimeInDays  : 10
SignatureValidationPolicy  : NONE
SignatureValidations    : {}
MaximumDownloadSizeMB   : 500
PartialConfigurations   :
RebootNodeIfNeeded      : False
RefreshFrequencyMins    : 30
RefreshMode              : PUSH
ReportManagers           : {}
ResourceModuleManagers   : {}
PSCoputerName            :
```

```
PS C:\Users\matte>
```



ApplyAndAutoCorrect

Drift Logged

Re-Apply the Desired Configuration

ApplyAndMonitor (*Default*)

Drift Logged in the System

ApplyOnly

No Drift check



Microsoft 365 DSC



M365DSC Solution



“Open-Source tool managed by Microsoft engineers and lead by the community”

@NikCharlebois – MSFT Senior Program Manager



Microsoft365DSC

Configuration-as-Code for the Cloud

<https://aka.ms/M365DSC>

Prerequisites

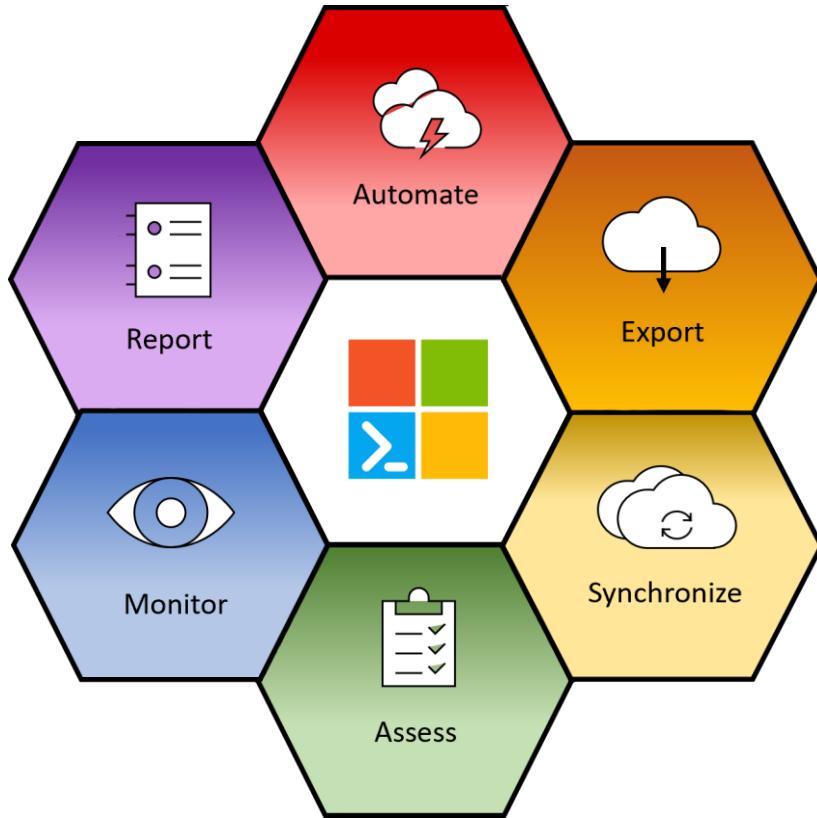
Workstation with PowerShell 5.1 or 7.1

Windows Terminal (*preferred option*)

Permissions to interact with M365 services

Experience in Microsoft 365 Administration





- Apply Configuration As Code via DSC
- Export Tenant Settings using ReverseDSC
- Push Settings across M365 Tenants
- Verify Tenant Settings against BluePrint
- Detect Drift in the M365 Tenants
- Generate Reports and Keep Changes Track



M365DSC Supported Authentication



```
PS C:\> Get-M365DSCCompiledPermissionList -ResourceNameList (Get-M365DSCLAllResources)

Name          Value
----          -----
ReadPermissions {Application.Read.All, Application.ReadWrite.All, Direct...
UpdatePermissions {Application.Read.All, Application.ReadWrite.All, Direct...
```

```
PS C:\> Update-M365DSCAllowedGraphScopes -ResourceNameList @("AADApplication", "IntuneDeviceCategory") -Type Read
```

Security & Compliance Center	ExchangeOnlineManagement (Connect-IPPSSession)		
Skype for Business Online	MicrosoftTeams (New-CSOnlineSession)		
SharePoint Online	PnP.PowerShell (Connect-PnPOnline)		
Teams	MicrosoftTeams (Connect-MicrosoftTeams)		



M365DSC Choose The Workloads



Microsoft365DSC | Configuration-as-Code for the Cloud

Home

Azure AD

Exchange

Intune

Office 365

OneDrive

Planner

Power Platform

Security & Compliance

SharePoint

Teams

Selection mode: Default

Authentication: Credentials

Azure AD

- AADApplication
- AADConditionalAccessPolicy
- AADGroup
- AADGroupLifecyclePolicy
- AADGroupsNamingPolicy
- AADRoleDefinition
- AADServicePrincipal
- AADTenantDetails
- AADTokenLifetimePolicy

Exchange

- EXOAcceptedDomain
- EXOActiveSyncDeviceAccessRule
- EXOAddressBookPolicy
- EXOAddressList
- EXOAvailabilityAddressSpace
- EXOAvailabilityConfig
- EXODistributionList
- EXOEmailPolicy
- EXOHostedConnectionFilterPolicy
- EXOHosteredContentFilterPolicy
- EXOMailboxPlan
- EXOHosterContentFilterRule
- EXOMailboxSettings
- EXOPremisesOrganization
- EXOTransportRule
- EXOManagementRole
- EXOMobileDeviceMailboxPolicy
- EXOFFiceAddressBook
- EXOJournalRule
- EXOMobileDeviceMailbox
- EXOOfflineAddressBook
- EXOPartnerApplication
- EXOQuarantinePolicy
- EXOSafeLinksRule
- EXOSharedMailbox

<https://Export.Microsoft365DSC.com>

```
Administrator: Windows PowerShell -> +
```

```
PS C:\Users\matteo> Export-M365DSCConfiguration -Quiet -GlobalAdminAccount $creds -Path "Z:\0365Lab\DCSExtracts\"
```

```
[1/128] Extracting [AADApplication]...  
[2/128] Extracting [AADConditionalAccessPolicy]...  
[3/128] Extracting [AADGroupsNamingPolicy]...  
[4/128] Extracting [AADGroupSettings]...  
[5/128] Extracting [AADMSGroupLifecyclePolicy]...  
[6/128] Extracting [AADNamedLocationPolicy]...  
[7/128] Extracting [AADPolicy]...  
[8/128] Extracting [AADRoleDefinition]...  
    ---[1/77] Global Administrator  
    ---[2/77] Guest User  
    ---[3/77] Restricted Guest User  
    ---[4/77] Guest Inviter  
    ---[5/77] User Administrator  
    ---[6/77] Helpdesk Administrator  
    ---[7/77] Service Support Administrator  
    ---[8/77] Billing Administrator
```

```
Loading default CIM keywords  
Processing  
Getting module list  
Processing  
Creating resource list  
Processing
```

```
|---[17/77] Device Users |---[17/77] Azure AD Joined Device Local Administrator  
|---[18/77] Device Join |---[18/77] Workplace Device Join |---[18/77] Compliance Administrator  
|---[19/77] Directory Synchronization Accounts  
|---[20/77] Device Managers  
|---[21/77] Application Administrator
```

Export-M365DSCConfiguration -LaunchWebUI

M365DSC Report sample



SharePoint



SharePoint



SharePoint



SharePoint

SPOAccessControlSettings	
EmailAttachmentsRequiresApproval	\$True
CommentsOnSitePagesEnabled	\$False
DisplayStartSiteOption	\$True
DisallowInheritedFileDownload	\$False
IPAddressEndpoints	\$False
ExternalServicesEnabled	\$True
IPAddressWACTokenLifetime	15
IPAddressAllowList	\$Null
IsSingleInstance	\$Yes
SocialBarOnSitePagesEnabled	\$False
EmailAnnotationsRequired	\$False
SPOBrowserIdleSignon	
Enabled	\$False
WaitAfter	00:00:00
IsSingleInstance	\$Yes
SignInAfter	00:00:00
SPOOfflineSite	
IsSingleInstance	\$Yes
Ensure	\$Absent
SPOSharingSettings	
PreviousSharedWithEveryoneFolder	\$False
FolderAnonymousLinkType	Edit
SharingDomainRestrictionMode	None
BeExternalSharingInvitations	\$False
NotifyOwnersWhenItemsAreShared	\$True
PreventExternalUserFromResharing	\$False
ShowABCUserClaim	\$False
RequiresAcceptingAccountMatchedWithAccount	\$False
EnableGuestSignInAcceleration	\$False
DefaultLinkPermission	NoOne
ShowPeoplePickerSuggestionsForGuestUsers	\$False
ShowEveryoneClaim	\$True
FileAnonymousLinkType	Edit
SharingCapability	ExternalUserAndGuestSharing
IsSingleInstance	\$Yes
DefaultSharingLinkType	AnonymousAccess

```

Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
ModuleConfig.ps1
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}
SPOSharingSettings e4f3b609-1ad5-43da-b5ea-424b15158204
{
    BccExternalSharingInvitations = $False;
    DefaultLinkPermission = "None";
    DefaultSharingLinkType = "AnonymousAccess";
    EnableGuestSignInAcceleration = $False;
    FolderAnonymousLinkType = "Edit";
    GlobalAdminAccount = $Credsglobaladmin;
    IsSingleInstance = $True;
    NotifyOwnersWhenItemsAreShared = $False;
    PreventExternalUserFromResharing = $False;
    ProvisionSharedWithEveryoneFolder = $False;
    RequireAcceptingAccountMatchedWithAccount = $False;
    SharingCapability = "ExternalUserAndGuestSharing";
    SharingDomainRestrictionMode = "None";
    ShowAllUsersClaim = $False;
    ShowEveryoneClaim = $True;
    ShowEveryoneExceptExternalUserClaim = $True;
    ShowEveryoneExceptGuestUserClaim = $True;
    ShowEveryoneLinkType = "Edit";
    SPOTenantSettings d8036c84-1le6-4d60-a357-59446efdec0
    {
        CDTType = "Public";
        ExcludeRestrictedSiteClassification = @();
        GlobalAdminAccount = $Credsglobaladmin;
        IncludeFileExtensions = @();
    }
    SPOTenantSettings 6a97f8a9-a7e5-4ed9-a458-68f3936cffd7
    {
        ApplyAppEnforcedRestrictionsToAdHocRecipients = $True;
        FilePickerExternalImageSearchEnabled = $True;
        GlobalAdminAccount = $Credsglobaladmin;
        HideDefaultThemes = $False;
        IsSingleInstance = "Yes";
        LegacyAutoprotocolsEnabled = $True;
        MaxCompatibilityLevel = "15";
        MinCompatibilityLevel = "15";
        NotificationsInSharePointEnabled = $True;
        OfficeClientADLDisabled = $False;
        OwnerAnonymousNotification = $True;
        PublicCdnAllowedFileTypes = "CSS,EOT,GIF,ICO,JPEG,JS,MAP";
        PublicCdnEnabled = $False;
        SearchResolveExactEmailOrUPN = $False;
        SignInAccelerationDomain = "";
        UseFindPeopleInPeoplePicker = $False;
        UsePersistentCookiesForExplorerView = $False;
        UserVoiceForFeedbackEnabled = $True;
    }
}

```



AzureDevOps Integration CI/CD



AzureDevOps Integration for CI/CD



AzureDevOps Project

The screenshot shows the Azure DevOps Project Overview page for the 'M365Dsc' project. It includes sections for 'About this project' (CI/CD Pipelines using Azure DevOps), 'Languages' (PowerShell), and a sidebar with various project management icons.

https://dev.azure.com

The screenshot shows the 'Agents' tab for the 'Microsoft365Dsc' service connection. It lists one agent named 'DC01' which is online. The last run was on April 14.

Name	Last run
DC01	Apr 14 ● Online

(Self-Hosted Agent)

The screenshot shows the 'Details' section for the 'Azure Resource Manager' service connection. It uses service principal authentication and lists 'Manage service connection roles' and 'Manage Service Principal' options.

(Service Connection)

The screenshot shows the 'Files' page for the 'M365Dsc' repository. It displays three files: 'azure-pipelines.yml', 'M365Config.ps1', and 'README.md'. The 'azure-pipelines.yml' file was last changed on April 13, 'M365Config.ps1' on April 14, and 'README.md' on April 10.

The screenshot shows the 'Secrets' page for the 'M365Secrets' key vault. It lists several secrets with their names, types, and status. Most secrets are marked as 'trashed'.

Name	Type	Status
DCConfigAdmin		✓ trashed
M365Appliance		✓ trashed
M365SecretsVaultSelfSigned		✓ trashed
M365SecretsCertPassword		✓ trashed
M365SecretsCertThumbprint		✓ trashed
M365SecretsCertThumbprint		✓ trashed
M365Config		✓ trashed
M365Secrets		✓ trashed
password		✓ trashed

(Azure Key Vault)

Q&A



The DSC Community: [DSC Community](#)

Microsoft365DSC: [Microsoft365DSC](#)

Official GitHub M365DSC Repository: [M365DSC](#)

GitHub Demo Repository: [aMS Delhi 2022 session](#)

THANK YOU!

