Automation with SQL, PowerShell, & Interactive Notebooks

Mike Nelson

Solutions Architect

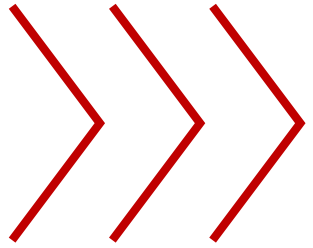Pure Storage

DATA PLATFORM
VIRTUAL SUMMIT 2021

Accelerating Data-Driven Success

>>> APIs and SDKs

>>> Interactive Notebooks & Snippets

OPEN STANDARDS

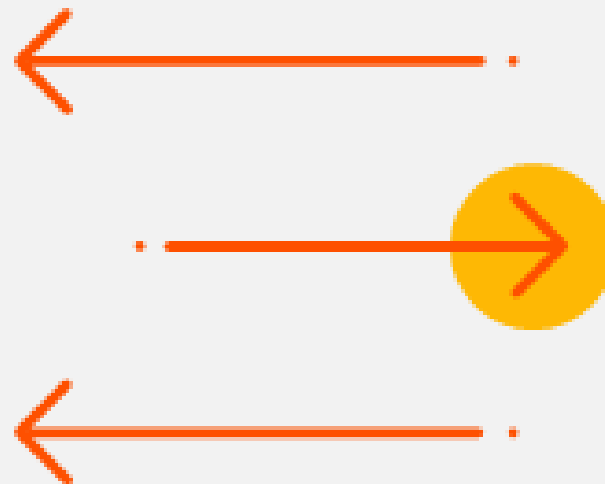**API DRIVEN ARCHITECTURE TO SUPPORT SIMPLIFIED INTEGRATION AND MACHINE BASED MANAGEMENT**

THE APIs

FlashArray
FlashBlade
Pure1
...

In-product, online, & docker container

THE SDKs

PowerShell
Python
Ruby
Go
Unified
… more coming
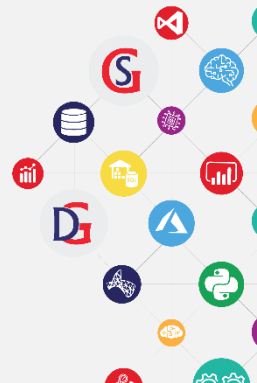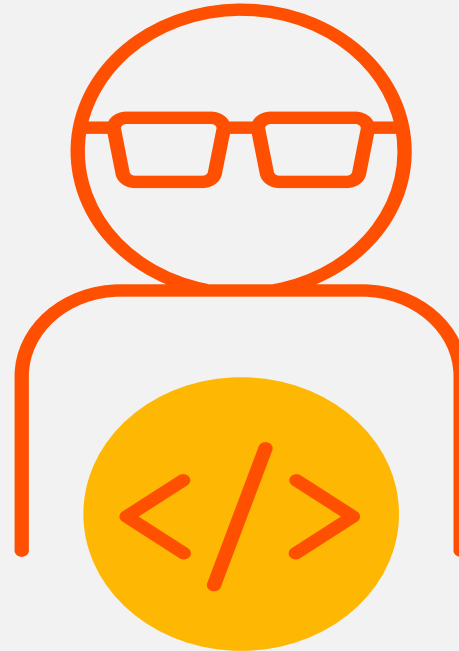
```
PS C:\> Get-Module -Name *pure*

ModuleType Version    PreRelease Name                                ExportedCommands
---------- -------    ---------- ----                                ----------------
Script     3.0                   purefbmodule                        {Add-PfbAlertWatcher, Add-PfbArrayConnections, Add-PfbArrayConnection…
Manifest   2.2.1.0               purestorage.flasharray.vmware
Script     2.0.0.2               PureStorage.FlashArray.VMware.Conf…  {Get-PfaConnectionFromArrayId, Get-PfaConnectionOfDatastore, Get-PfaD…
Script     2.0.1.0               PureStorage.FlashArray.VMware.RDM    {Convert-PfaRdmToVvol, Copy-PfaSnapshotToRdm, Get-PfaConnectionFromRd…
Script     2.0.0.2               PureStorage.FlashArray.VMware.Soft…  {Deploy-PfaAppliance, Get-PfaAppliance, Get-PfaVspherePlugin, Install…
Script     2.0.0.2               PureStorage.FlashArray.VMware.VCF    {Get-PfaVcfVasaProvider, Initialize-PfaVcfWorkloadDomain, New-PfaVcfV…
Script     2.0.0.1               PureStorage.FlashArray.VMware.VMFS   {Add-PfaVmfsToCluster, Get-PfaVmfsSnapshot, Get-PfaVmfsVol, New-PfaVm…
Script     2.0.0.2               PureStorage.FlashArray.VMware.Vvol   {Add-EntityDefaultKeyProvider, Add-KeyManagementServer, Add-Passthrou…
Script     1.0.0.1               PureStorage.FlashArray.VMware.Vvol…  {Get-PfaVvolFaultDomain, Get-PfaVvolReplicationGroup, Get-PfavVolRepl…
Script     1.0.0.1               PureStorage.FlashArray.VMware.Vvol…  {Build-PfaVvolStoragePolicyConfig, Edit-PfaVvolStoragePolicy, Get-Pfa…
Script     1.4.4.1               PureStorage.Pure1                    {Get-PureOneAlert, Get-PureOneArray, Get-PureOneArrayLoadMeter, Get-P…
Script     0.0                   PureStorageBackupSDK                 {Add-PfaBackupCred, Add-PfaBackupJob, Connect-PfaVMHardDisk, Dismount…
Binary     1.17.16.0             PureStoragePowerShellSDK             {Add-PfaArrayToPod, Add-PfaHostGroupsToProtectionGroup, Add-PfaHostIq…
Binary     2.2.272.0             PureStoragePowerShellSDK2            {Connect-Pfa2Array, Disconnect-Pfa2Array, Get-Pfa2Admin, Get-Pfa2Admi…
Script     2.0.2.0               PureStoragePowerShellToolkit         {Get-AllHostVolumeInfo, Get-FlashArrayConfig, Get-FlashArrayDisconnec…

PS C:\> Get-Command -Module PureStoragePowerShellSDK2

CommandType     Name                                               Version      Source
-----------     ----                                               -------      ------
Cmdlet          Connect-Pfa2Array                                  2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Disconnect-Pfa2Array                               2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2Admin                                      2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2AdminApiToken                              2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2AdminCache                                 2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2AdminSetting                               2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2Alert                                      2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2AlertEvent                                 2.2.272.0    PureStoragePowerShellSDK2
Cmdlet          Get-Pfa2ApiClient                                  2.2.272.0    PureStoragePowerShellSDK2
```

SDK Timeline

The Idea
01 — 2015

1.5.5.1
02 — July 2016

1.6.6.0
03 — Oct 2016

1.7.4.0
04 — Feb 2017

1.13.0.3
05 — May 2018

1.13.1.12
06 — June 2018

1.16.6.0
07 — Aug 2019

1.17.3.0
08 — April 2020

2.2.272.0 — Aug 2020
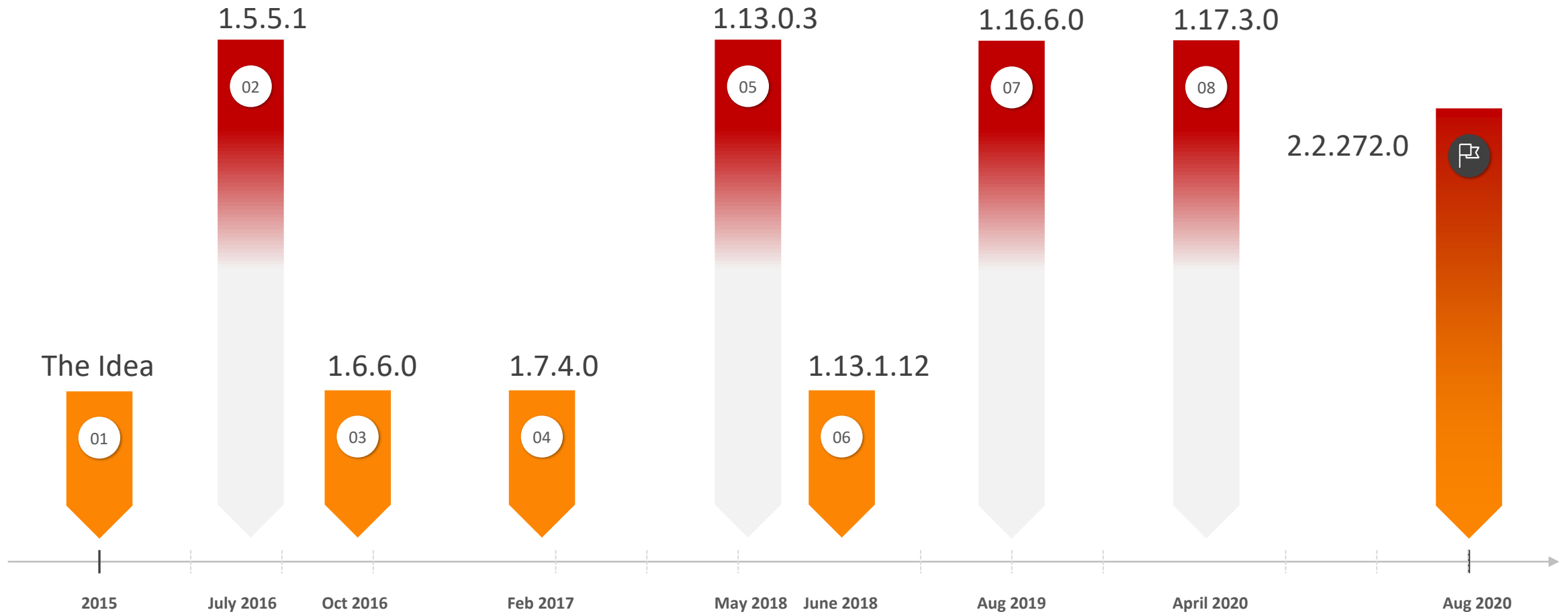
SQL BackupSDK

- ## PureStorageBackupSDK
  ### PowerShell Script button
  ### Restore
  ```
  Restore-PfaBackupJob -HistoryId 1
  ```
  ### Dismount
  ```
  Dismount-PfaBackupJob -HistoryId 1
  ```
  ### Remove
  ```
  Remove-PfaBackupHistory -HistoryId 1
  ```


Creating new backup configurations
```
Add-PfaBackupJob -ConfigName "<ConfigName>" `
 -Component "<DBName>" -MetadataDir "C:\Temp" `
 -ComputerName "localhost" –FAName `
 "<FlashArrayName>"
```
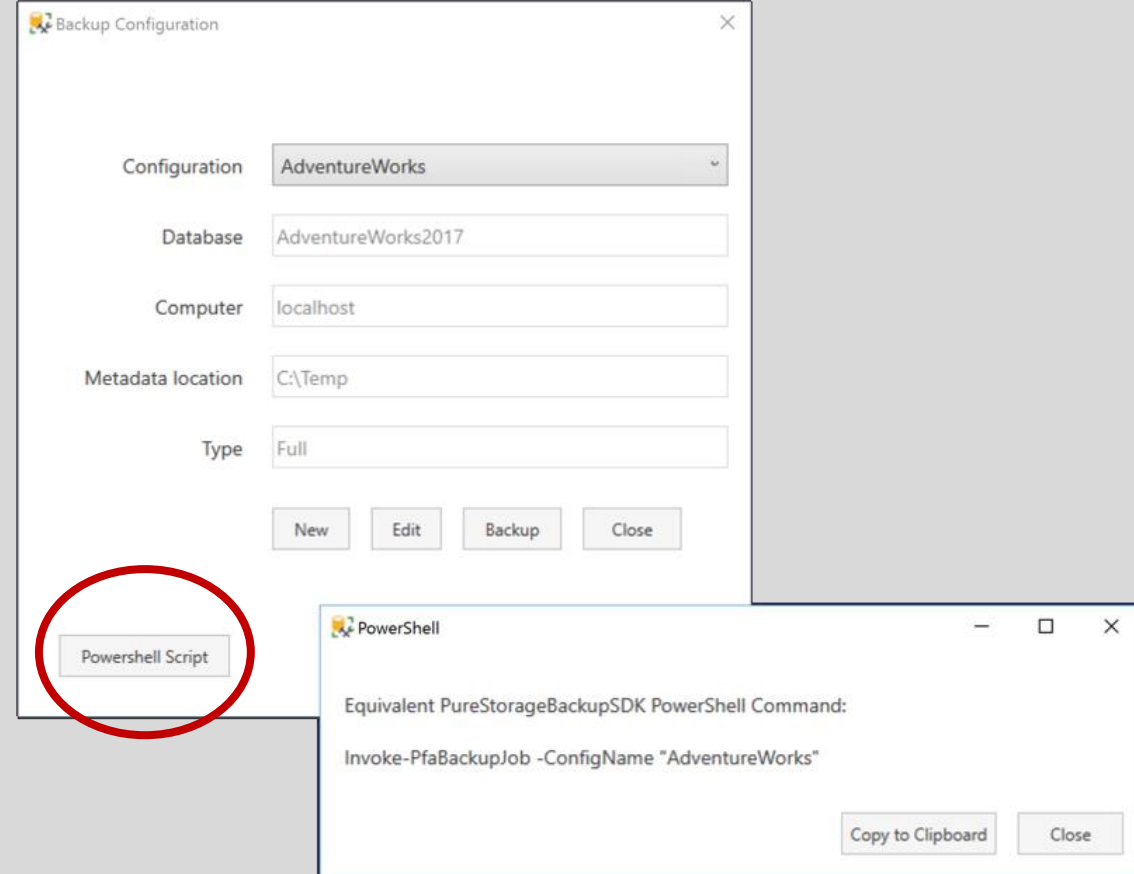
FlashArray Python SDK

Pure1 SDK

Pure Storage Open Connect

GitHub contributions from Pure Storage Customers, Architects, System Engineers, and Developers.

⊙ Mountain View, CA   ⚭ https://code.purestorage.com   ✉ openconnect@purestorage.com   ⊞ Part of Pure Storage

⌂ Overview   ⊟ Repositories 117   ⬡ Packages   ⊗ People 36   ⧉ Teams 19   ▥ Projects   ⬈ Insights   ⚙ Settings

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⊟ **Code-of-Conduct** ⠿	⊟ **powershell-toolkit** ⠿	⊟ **PureStorage.FlashArray.VMware** ⠿
Code of Conduct for all Pure Storage Open Connect projects	The Pure Storage PowerShell Toolkit provides a number of different cmdlets ranging from core Windows Server, WMI, WSMAN, & .NET assemblies. The intention of the toolkit is to provide a library for ...	Pure Storage FlashArray VMware PowerShell Module
	● PowerShell ☆ 19 ⑂ 4	● PowerShell ☆ 5 ⑂ 3

⊟ **zero-touch-provisioner** ⠿	⊟ **rest-client** ⠿	⊟ **pure-exporter** ⠿
FlashArray and FlashBlade Zero-Touch-Provisioner	Pure Storage FlashArray Python REST 1.X Client	Prometheus exporter for Pure Storage FlashArray and FlashBlade
● Go ☆ 5 ⑂ 1	● Python ☆ 32 ⑂ 22	● Python ☆ 16 ⑂ 16

⊟ Repositories

🔍 Find a repository...   Type ⌄   Language ⌄   Sort ⌄   ⊟ New

pure1-unplugged

An on-premises storage fleet management system leveraging Kibana

People

View all

Invite someone

Top languages

● Python   ● PowerShell   ● Shell   ● Go
● PLpgSQL

Most used topics   Manage

purestorage   flasharray   powershell

python   ansible

PowerShell Toolkits

+ Code + Markdown | ▷ Run All ≡ Clear Outputs ↺ Restart ☐ Interrupt | ▦ Variables ⋯   🖳 .NET Interactive

✎ ⊟ ⋯ 🗑

Learning the Pure Storage PowerShell SDK - .Net Interactive Notebook Series

Notebook #1 - Connecting to a FlashArray

This .NET Interactive Notebook for VSCode walks through how to connect to a Pure FlashArray using the Pure Storage PowerShell SDK 2.x.

For full details on the SDK please go to the Microsoft Platform Guide.

More Interactive Notebooks can be found in this Gitub Respository.

Install the Pure Storage PowerShell SDK module from the PowerShell Gallery

```powershell
Install-Module -Name PureStoragePowerShellSDK2
```
PowerShell (.NET Interactive)

Import the SDK module.

```powershell
Import-Module -Name PureStoragePowerShellSDK2 -Force
Get-Module -Name PureStoragePowerShellSDK2 -Verbose
```
PowerShell (.NET Interactive)

⋯

```
ModuleType Version    PreRelease Name                      ExportedCommands
---------- -------    ---------- ----                      ----------------
Binary     2.2.272.0             PureStoragePowerShellSDK2 {Connect-Pfa2Array, Disconnec…
```

Defining Notebook Variables

For the prupose of this notebook, we need to define a variable to have the code work seamelssly across all the code examples with a specific FlashArray. Please enter the IP address of your FlashArray below.

```powershell
$array = 10.1.1.1 # Change Me --> IP address of the FlashArray
```
PowerShell (.NET Interactive)
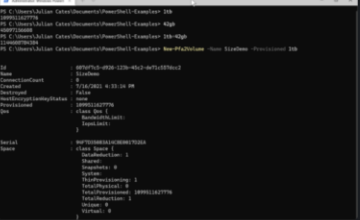
Devon Carr 7:17 AM
Question for anyone: What was the reasoning behind removing the "Unit" parameter | Friday, July 16th ⌄ | A2Volume" command in PowerShellSDKv2? This was super helpful and as I am converting over to v2 from v1, I am slowing down with having to find drive sizes in bytes...

julian 9:33 AM
I can't speak to the motivation behind the change, but only recently discovered that PowerShell itself does some automatic conversion to bytes when you use labels such as "1TB" "42GB", etc. So, no need to specify a unit other than bytes as it will "just work". For example:

image.png ⌄

Devon Carr 10:15 AM
Thank you for your quick response Julian! I just realized that when Pure says "1T" in the GUI, it actually is talking in TiB (not TB). Now at least I can use a calculator to get the correct byte size.

Scott Burningham 3:36 PM
joined #pfa-powershell along with 8 others.

Sunday, August 1st ⌄

cadayton 7:07 PM
Time to get cracking on SDK v2 all arrays are now 5.3 or better.
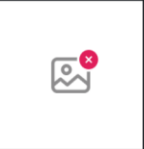
Monday, August 2nd ⌄

Chriss 1:18 AM
joined #pfa-powershell.

Nate B 11:25 AM
@codyhosterman, I'm getting ready to deploy the v3 VM Analytics collector in Vmware environment. Does this article still work for v3 or is there a new CMD?
https://www.codyhosterman.com/2019/10/deploying-the-pure1-vm-analytics-collector-ova-with-powershell/

Cody Hosterman
Deploying the Pure1 VM Analytics Collector OVA with PowerShell
So I just posted on deploying the Pure1 VM Analytics Collector via manual methods.
But how about PowerShell? Well you are in luck! I've built a new cmdlet to help you with this. For backgroun...
Oct 4th, 2019 (65 kB) ⌄

David Stamen 11:25 AM
@Nate B it may, i also updated it for v 3.2.0 which we. just released too. https://davidstamen.com/2021/07/29/using-powercli-to-deploy-the-pure-storage-vmw
davidstamen.com
Using PowerCLI to Deploy the Pure Storage VMware Appliance
Now that the latest Pure Storage vSphere Client Plugin is available as a remote plugin is is now deployed as an OVA. I have put together this

Message #pfa-powershell

Rika Aug 12th at 10:39 AM
Hello cool people!
I'm trying to determine if our vsphere plugin can be called via API once it's installed.

5 replies

codyhosterman 5 days ago
It cannot--it is entirely GUI driven. The vRO plugin has similar features though that can be driven via the vRO API

codyhosterman 5 days ago
Our PowerShell module has similar features to that can be driven programmatically

Rika 5 days ago
Ahh thank you Cody!

codyhosterman 5 days ago
👍

barkz 5 days ago
@Rika For PowerShell examples check:
• Windows PowerShell on support site.
• GitHub Open Connect
Pure Storage Open Connect
GitHub contributions from Pure Storage Customers, Architects, System Engineers, and Developers.

Join **code.purestorage** on Slack.
1186 users are registered so far.

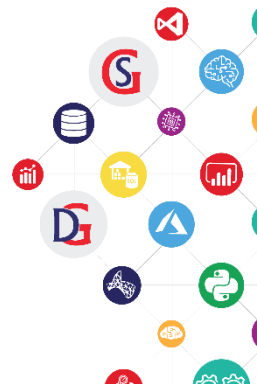you@yourdomain.com

GET MY INVITE
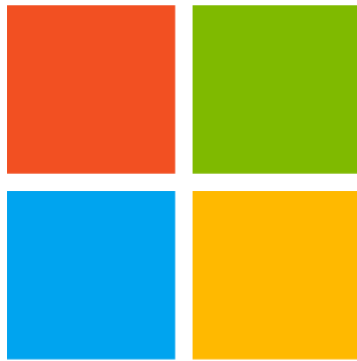
or sign in.

Demo

PowerShell & more...

Contact Us!

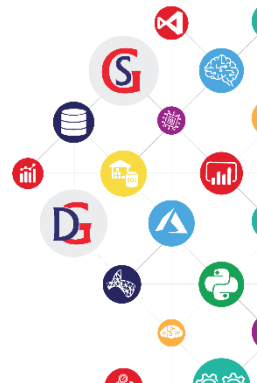**codeinvite.purestorage.com**

fasolutions@purestorage.com

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