Accelerating Windows Integrations: Introducing the SNIA Swordfish™ PowerShell Tool Kit and Windows Admin Center Integration

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HPE  

Barkz  
Pure Storage
Agenda

- Overview of SwordFish™ PowerShell Toolkit
- Overview of Windows Admin Center (WAC)
- Building a WAC Gateway Extension
Which Tools are right for you!

- Swordfish PowerShell Toolkit
- Swordfish to RestAPI Map
- Swordfish PowerShell Provider Framework
- Swordfish Emulator
- Swordfish Mockup website
Which Tools are right for you!

YOUR Storage Management software HERE!

Swordfish Provider

Swordfish Provider Example

Swordfish PowerShell

Swordfish simulator

Swordfish Mockups.com

RestAPI to Swordfish Map example

YOUR Storage Device HERE!

WAC Extension

Uses

Swordfish Consumers (Clients)

Swordfish Providers (Storage Devices)
SNIA SWORDFISH™ POWERSHELL TOOLKIT
WHAT IS THE POWERSHELL TOOLKIT?

- Open source project between HPE and Pure Storage
  - [https://github.com/SNIA/Swordfish-Powershell-Toolkit](https://github.com/SNIA/Swordfish-Powershell-Toolkit)
- Supported on Windows Server, Linux and macOS
  - Can query a Swordfish Target, A simulator, or even SwordFishMockup.com
- PowerShell wrapper for REST API calls to Redfish and Swordfish
Everything is returned as objects (and nested objects)

- Cast to Variable
- Can filter by properties
- Can dig deeper into single values
- And you can even cast the Variable BACK to JSON format
PowerShell Command Help

- Get a list of valid commands

```bash
Get-Command -Module SNIASwordFish
```

Example output:

```
NAME               Get-SwordFishVolume
SYNOPSIS           Retrieve the list of valid volumes from the SwordFish target.
SYNTAX             Get-SwordFishVolume [-StorageServiceID] <String> [-VolumeId] <String> [CommonParameters]
DESCRIPTION         This command will either return the complete collection of volumes that exist across all of the storage services, unless a specific storage service ID is used to limit it, or a specific volume ID is directly requested.
PARAMETERS
  -StorageServiceID <String>
    The storage service ID name for a specific storage service, otherwise the command
    will return storage groups for all storage services.
  -VolumeId <String>
    The volume ID will limit the returned data to the type specified, otherwise the command
    will return all volumes.
```

Examples:

```
PS C:\> Get-SwordFishVolume
```

```
PS C:\> Get-SwordFishVolume -StorageServiceId AC-102345
```

```
PS C:\> Get-SwordFishVolume -StorageServiceId AC-102345 -VolumeId 2
```
### PowerShell Toolkit Work Items

#### The PowerShell Toolkit commands:
- Get-SwordFishChassis (+ Power, +Thermal)
- Get-SwordFishDrive
- Get-SwordFishEndpoint
- Get-SwordFishEndpointGroup
- Get-SwordFishStoragePool
- Get-SwordFishStorageService
- Get-SwordFishVolume
- Get-SwordFishClassOfService
- Connect-SwordFishTarget
- Connect-SwordfishMockup

#### Command sets that need to be written; (in order of priority)
- New/Set/Remove-SwordFishEndpoint
- New/Set/Remove-SwordFishEndpointGroup
- New/Set/Remove-SwordFishStoragePool
- New/Set/Remove-SwordFishStorageGroup
- New/Set/Remove-SwordFishConsistencyGroup
- New/Set/Remove-SwordFishVolume
- Set-SwordFishStorageService
- Set-SwordFishChassis
- Get/New/Set/Remove-*LoS
- New/Set/Remove-SwordFishClassOfService

#### Common Nomenclature
- RestAPI vs PowerShell. Create = New, Read = Get, Update = Set, Delete = Remove
- All Commands must have inline help before being checked into the build
- All Commands must work against BOTH the Swordfish Targets (directly) and SwordFishMockups.com
- All Commands are open source, no compiled code or external DLL dependancies
RestAPI to SWORDFISH™ Mapping
What you will need

- RestAPI Documentation to your Target Device
- PowerShell Toolkit that exposes your RestAPI
- Basic PowerShell knowledge
- Access to SwordfishMockups.com
- Access to the Swordfish Spec

Steps

1. Retrieve the Volume Object from your Device and expand its JSON
2. Hold it side-by-side to a Volume Object from SwordFishMockups.com
3. Look for Matches and check the Vendor RestAPI documentation vs the Swordfish Spec for similarities, i.e. You may show the space of a Volume as MBytes, while the Swordfish Specs uses Bytes. You would need to know to multiply your result by 1024 to before populating the relevant swordfish field
4. Go through the rest of the Swordfish Spec looking for fields that you can implement and fill in using your results.
Create a File Structure to match Swordfish

- Using PowerShell you can create a function for each thing you wish to express in SwordFish.
- Make a master script that runs your function against all things in your device.
- Create PowerShell Objects that can be converted to JSON as saved as Index.json files.
- In example to the right, Variables all start with ‘$’ and constants are shown in brown.

SEE HTTPS://GITHUB.COM/CHRIS-LIONETTI/SWORDFISHMOCKUP
SWORDFISH™ PowerShell Provider Example
DEMO

SNIA Swordfish™ PowerShell Toolkiit
Developing a Windows Admin Center Gateway for SwordFish™
EXTENSION TYPES

• WAC context is based on a Tool or Solution Extension

• Tool Extensions
  • Executes either WMI calls or PowerShell scripts
  • Side load extension for debugging

    MsftSme.sideLoad("http://localhost:4201")

• Solution extensions are based on a Connection Context
  • Servers
  • Hyper-Converged
  • Computers
  • Failover Clustering
  • Solution Extensions (3rd Party)
WAC SDK 1.0

- **SDK versions**
  - `.latest` – The latest SDK for production development/deployment
    
    
    "@microsoft/windows-admin-center-sdk": "latest",
  - `.insider` – Insider SDK which is the latest build for development
  - `.next` – vNext SDK (future)

- **Plugin types**
  - WMI Gateway or PowerShell Gateway

- **HttpsPlugin interface (C#) – IPlugIn deprecated**

- **Publish** through NuGet (v2 API) feed
  - Microsoft Extension Gallery
  - https://aka.ms/sme-extension-feed
Example Solution Extension
We might have to restart the Windows Admin Center gateway after installing an extension, temporarily affecting availability for anyone else currently using this gateway.

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• Swordfish + Windows Admin Center gateway extension
  • Leverages [https://github.com/SNIA/Swordfish-Powershell-Toolkit](https://github.com/SNIA/Swordfish-Powershell-Toolkit)
• Update Repo
• Actively working with the WAC Engineering Team
  • Credential Management
  • Use new SDK 1.0 vs old SDK 0.1
  • Gateway extension implementation strategy based on new SDK 1.0 features
• Attend the SwordFish™ Workshop
  • Sept 24, 5-7pm
Resources

- SwordFish™ PowerShell Toolkit
- Windows Center Admin Overview
- Windows Admin Center Docs
- Getting started
  1. Download
  2. Install
  3. Get started
Q&A