PowerShell – A DBA’s Best Friend
Who am I?

- Senior Oracle & SQL Server Database Administrator
- Past Senior Performance Test Engineer
- Past Oracle Instructor
- Past Lead Database Administrator
- Oracle Certified Professional (OCP) – 8, 8i, 9i, 10g
- Hewlett Packard AIS – LoadRunner v11 Certified
- ITIL Foundation Certificate in IT Service
Who Pays My Bills?

- University of California Office of the President
- The Office of the President is the system wide headquarters of the University of California, managing its fiscal and business operations, and supporting the academic and research missions across its campuses, labs and medical centers.
- Together with the university’s executive leadership, the Office of the President helps give shape to a vision for the university, managing the activities that are central to UC’s Public Mission and essential to the idea of one university.
- Teach
- Research
- Public Service
Agenda

- What is PowerShell?
- PowerShell Environments
- History and Background
- What you Need to Know about PowerShell
- Why Use PowerShell for Database Management?
- Setting up PowerShell
- SQL Modules
- Important Cmdlets
- Using the ISE
- Setting up Environment for Oracle/PowerShell
- Configuring Connections
- Retrieving Data
- Working with Data
- Much more....
Quick Poll Questions

- How many of you have used PowerShell?
- How many of you work in a Windows environment?
- What types of RDBMS do you support?
  - Oracle?
  - SQL Server?
  - MySQL?
  - Others?
- What would you like to learn from this session?
KEEP CALM AND LEARN POWERSHELL
Powershell Your New Best Friend

- Best way to learn powershell & SharePoint...
- get-help cmdlet -full
- commandlet -?
- get-help get-SP*
- get-help *Add*
- get-help *site*
- get-help new-SPSite
- examples
- examples
- full

More than twice as commands many as STSADM!
What is PowerShell?

- Replacement for VB Scripting and Command Prompt
- A task automation and configuration management tool for IT professionals
- An interactive object-oriented command environment with scripting language features utilizing small programs called cmdlets.
- Simplifies configuration, administration and management of heterogeneous environments
- Standard-based remoting protocols
- Object based extensible scripting solution integrated into Windows OS
- Great for IT professionals who do not have time and need to simplify
What is PowerShell – Cont’d

- Automation Engine
- Command-line Shell
- Scripting Language
- SQLPS
- Mini Shell
- PowerShell utility for SQL Server
- Acts like the command line
- Some limitations – V2
- SQL module preloaded
- Development Framework
- ISE – Integrated Scripting Environment
- PS Embedded in Host Applications
History & Background

- Born: 1999
- 2005: Code name – Monad
- 2006: Version 1.0
  - 130 cmdlets
- 2008: Version 2.0
  - 230 cmdlets
  - Backward compatible
  - Integrated shell environment (ISE)
  - Remoting
- 2012: Version 3.0
  - >2300 cmdlets
  - WinPE
  - Web Access
  - Enhanced ISE
  - Workflow
- 2013: Version 4.0
  - >2300 cmdlets
  - Desired State Configuration (DSC)
- 2015: Version 5.0
  - >2300 cmdlets
  - Zip Package Manager
  - Copy files between sessions
Important Tidbits of PowerShell

- Complete Scripting Solution
- Object Based
- Based on .NET Framework
- Uses Object Models (COM, ADSI, ADO, WMI...)
- Integrates with Most Software
- Multiple RDBMS Support
  - SQL Server
  - Oracle
  - MySQL
Why Use PowerShell for DB Management?

- Lightweight tool to manage simple database operations
- Utilize the power of .NET
- Not GUI
- Lack of command line scripting for Oracle database management in Microsoft
- Database task automation without having to use a batch file, job, etc.
- DBAs typically manage multiple databases (Oracle, SQL Server, MySQL)
Setting up PowerShell

- Already Installed
- Find it:

![Programs screenshot showing PowerShell]

- Download it (Windows Management Framework):
Introduction to PowerShell

PS C:\Users\Stimely> get-help

TOPIC
Windows PowerShell Help System

SHORT DESCRIPTION
Displays help about Windows PowerShell cmdlets and concepts.

LONG DESCRIPTION
Windows PowerShell Help describes Windows PowerShell cmdlets, functions, scripts, and modules, and explains concepts, including the elements of the Windows PowerShell language.

Windows PowerShell does not include help files, but you can read the help topics online, or use the Update-Help cmdlet to download help files to your computer and then use the Get-Help cmdlet to display the help topics at the command line.

You can also use the Update-Help cmdlet to download updated help files as they are released so that your local help content is never obsolete. Without help files, Get-Help displays auto-generated help for cmdlets, functions, and scripts.
Object Oriented Terminology

- **Class** = Blueprint
- **Properties** = Description
- **Methods (functions)** = Actions
- **Object** = House
- Instantiating a new object = Building a New House
- Each object is an instance of the class = House a copy of the blueprint
What are Cmdlets?

- Cmdlets are commands in PowerShell
  - Every cmdlet is an action which returns Microsoft .NET Framework object
- All cmdlets are designed with a similar syntax and structure
- Structure of a cmdlet:
  - Verb – noun – parameter
  - E.g.: Get-process
    - Get-process –name oracle
- Command Verbs
  - Get
  - Set
  - Enable
  - Disable
  - New
  - Remove
Important cmdlets to use

- Get-Help or ? Or Help
- Get-Command or gc
- Get-Item
- Get-Content
- Get-Service
- Get-Process
- Get-PSDrive of gdr
- Get-Alias or ga
- Get-Member or gm
Find CMDLETS

- **Get-Command** – Lists all cmdlets in version
  - Check version – $psversiontable
  - Get-Command | more (No ISE – only console)
  - Lists cmdlets, aliases, functions, scripts, filters, workflows and applications

  [-Noun <String[]>] [-ParameterName <String[]>] [-ParameterType <PSTypeName[]>] [-Syntax]
  [-TotalCount <Int32>] [-Verb <String[]>] [<CommonParameters>]

  <CommandTypes>] [-ListImported] [-Module <String[]>] [-ParameterName <String[]>]
  [-ParameterType <PSTypeName[]>] [-Syntax] [-TotalCount <Int32>] [<CommonParameters>]
Learn PowerShell – Get-Help

- Displays information about Windows PowerShell commands and concepts (Man pages)

- Best way to learn PowerShell
  - E.g.: Get-Help Get-Alias

- Many ways to display help
  - Get-help (cmdlet)
  - (cmdlet) –?
  - Get-Help (cmdlet) –examples
  - Get-Help (cmdlet) –detailed
  - Get-Help (cmdlet) –full
  - Get-Help (cmdlet) –ShowWindow (PowerShell 3.0/4.0)
PowerShell
Cmdlet of the Day
Demo – Get-Help/cmdlet use
Database Modules to Add

● What is a Module?
  ◦ A *module* is a set of related Windows PowerShell functionalities, grouped together as a convenient unit

● Oracle
  ◦ ODP.net

● MySQL
  ◦ MySQL.NET connector

● SQL Server
  ◦ SQLPS Module
Using the ISE

1. **PowerShell tab**
2. **Script**
3. **Console**
4. **Command Pane**
5. **Shortcuts Toolbar**
Integrated Scripting Environment (ISE) DEMO
Connecting Oracle to PowerShell

- Install Oracle 11g Express Edition
- PowerShell 2.0 or later (preferably 3.0 or later)
- Oracle Data Access Components (ODAC) – Oracle Developer Tools for Visual Studio
- Toad for Oracle
- Set-ExecutionPolicy -Scope Process -ExecutionPolicy Bypass
- Function – Get-OLEDBData code found at link below:
Oracle Connection Configuration

- Load ODAC
  - Oracle Data Provider for .NET (ODP.NET)
  - DataAccess.dll

- OLE DB

- Microsoft’s Data Provider for Oracle

- ODBC
Other Connection Options

- TNSNames
- Configuration Files
- Using Credentials
Retrieving Data

- Loading and establishing a connection using ODP.net
- Using functions to pull data
  - Reading large amounts of data
  - Data readers
- Role of parameters in retrieving data
- Data types
Working with Data

- Sorting and exporting data
  - Export to text files
  - Export to html

- Inserting data
  - Add functions
  - Making it work with bulk inserts

- Updating and Deleting Data
  - Functions to use
  - Multi-statement blocks
  - Error Checking
  - Running the script

- Creating and using Oracle Data Adapter
Scripting with PowerShell

- Common Code Bodies
- Creating reusable functions for scripts with library of Oracle functions
- PowerShell profile
- Common libraries
Automating tasks with PowerShell

- Inputs and Outputs
- Parameters to use
- Functions for automation
- How to automate the code created
Creating a script library

- Setting the path and profile
- Creating PowerShell modules for reuse
- Function support
How to use SQL Plus with PowerShell

- Creating SQLPlus PowerShell script
- Role of functions
- Accessing the database using SQL Plus from within PowerShell
- Iterating through files
DEMO
Putting it all Together
References & Links

- **Instant Oracle Database and PowerShell How-to**  - Geoffrey Hudik
- [http://powershell.org/wp/](http://powershell.org/wp/)
- [https://www.youtube.com/channel/UCFX97evt_7Akx_R9ovfiSwQ](https://www.youtube.com/channel/UCFX97evt_7Akx_R9ovfiSwQ)
- [https://www.idera.com/productssolutions/freetools/powershellplus](https://www.idera.com/productssolutions/freetools/powershellplus)
Summer Conference 2016
- Starring – Craig Shallahamer  orapub.com
- 18 August 2016
- 8:00 AM – 5:00 PM
- Chevron, 6101 Bollinger Canyon Rd.
- San Ramon, CA 94583
- Nocouug.org

FIRST TIME ATTENDEES FREE!