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 v11Certified
- ITIL Foundation Certificate in IT Service

ORACLE Certified Professional

AIS Accredited Integration Specialist HP CERTIFIED PROFESSIONAL

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

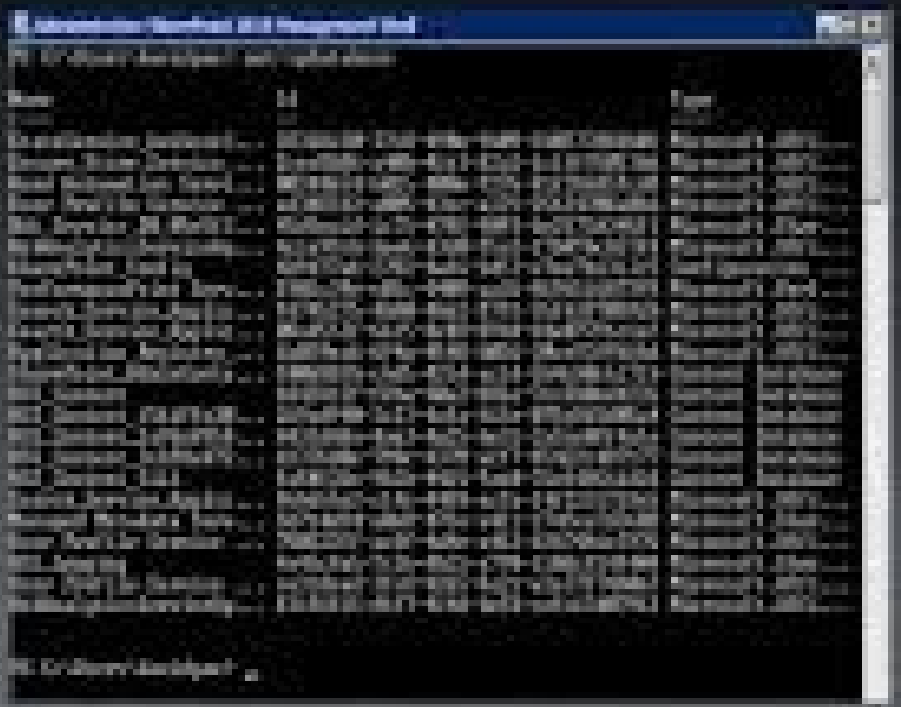
- How many of you have used PowerShell?
- How many of you work in a Windows environment?
- What types of RDBMS do you support?
  - Oracle?
  - SQL Server?
  - MySQL?
  - Others?
- What would you like to learn from this session?


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

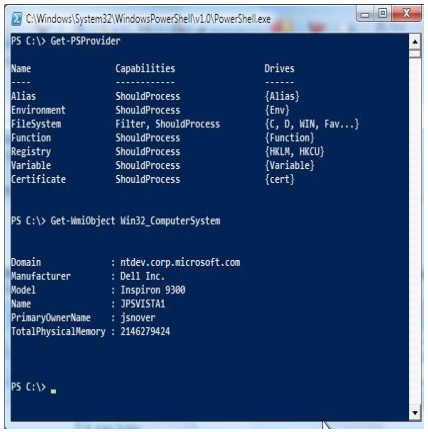
- More than twice as commands many as STSADM!

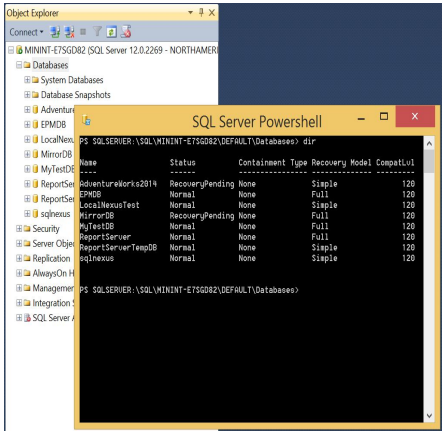


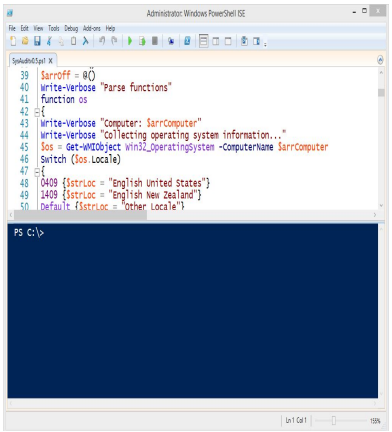
What is PowerShell?

- 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







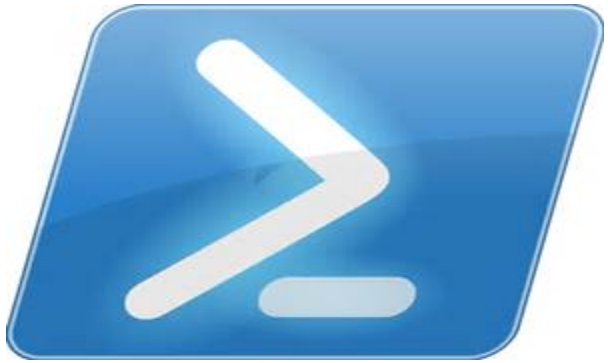
- Automation Engine
- Command-line Shell
- Scripting Language

- 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

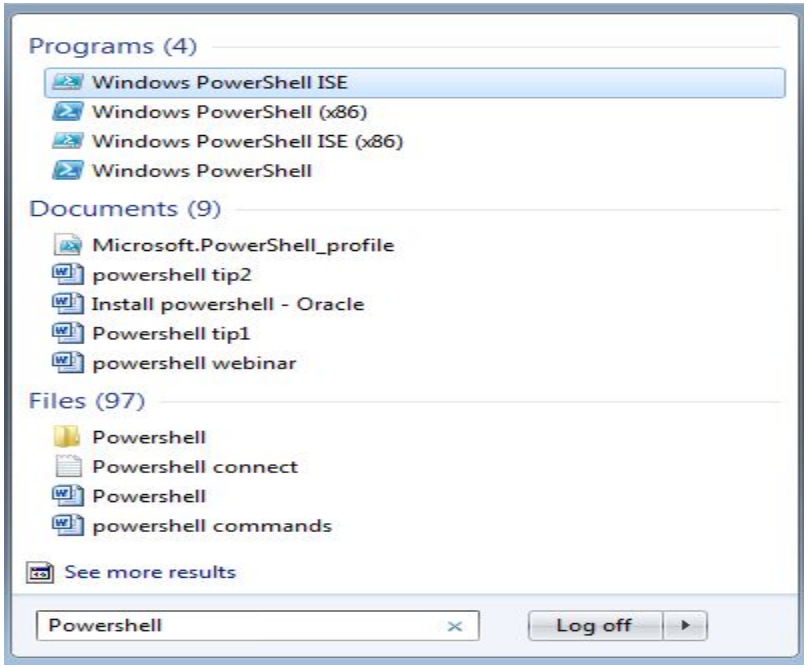
- Complete Scripting Solution
- Object Based
- Based on .NET Framework
- Uses Object Models (COM, ADSI, ADO, WMI…)
- Integrates with Most Software
- Multiple RDBMS Support
  - SQL Server
  - Oracle
  - MySQL

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)

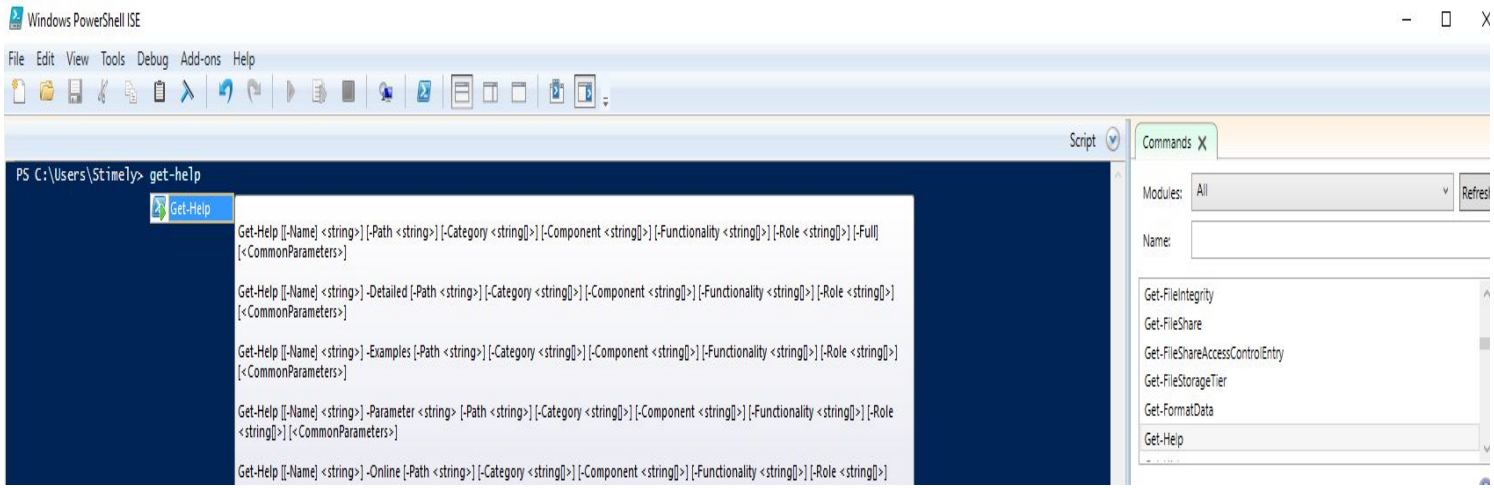
Setting up PowerShell

- Already Installed
- Find it:



- Download it (Windows Management Framework):
  - https://www.microsoft.com/en-us/download/details.aspx?id=40855

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

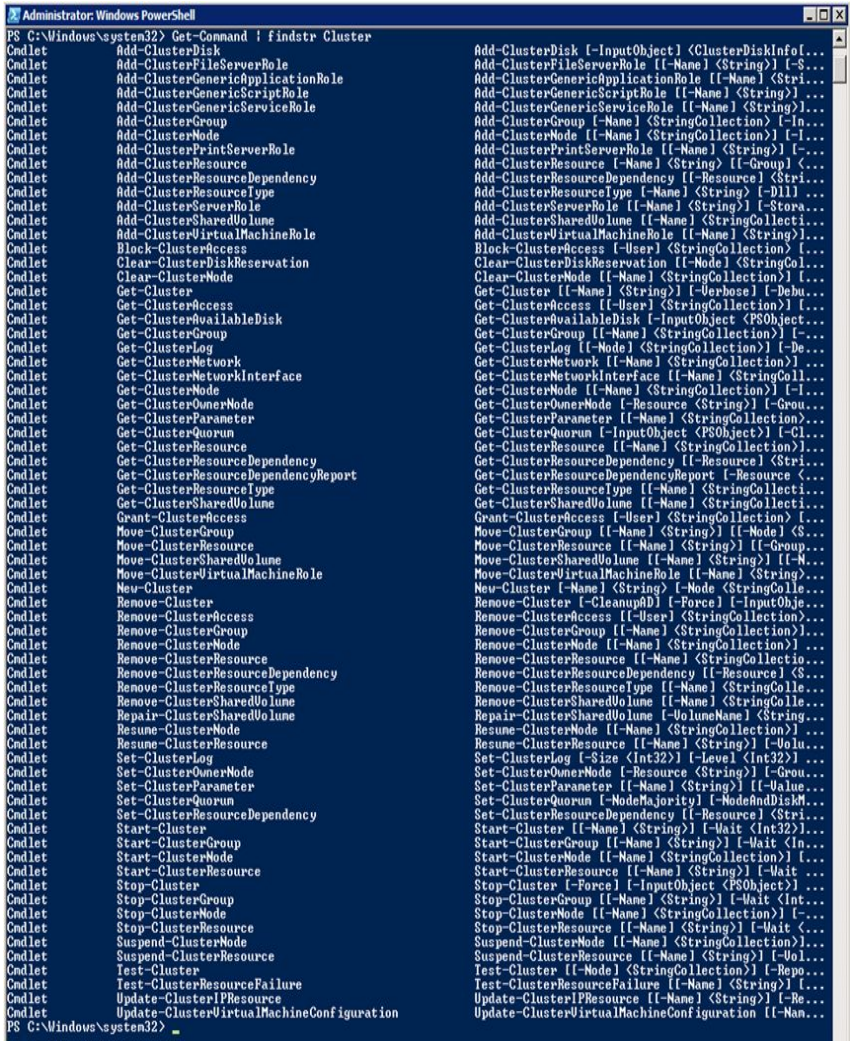
- Class = Blueprint
- Properties = Description
- Methods (functions) = Actions
- Object = House
- Instantiating a new object = Building a New House
- Each object is an instance of the class = House a copy of the blueprint

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

Get-Command [[-ArgumentList] <Object[]>] [-All] [-ListImported] [-Module <String[]>]
[-Noun <String[]>] [-ParameterName <String[]>] [-ParameterType <PSTypeName[]>] [-Syntax]
[-TotalCount <Int32>] [-Verb <String[]>] [<CommonParameters>]

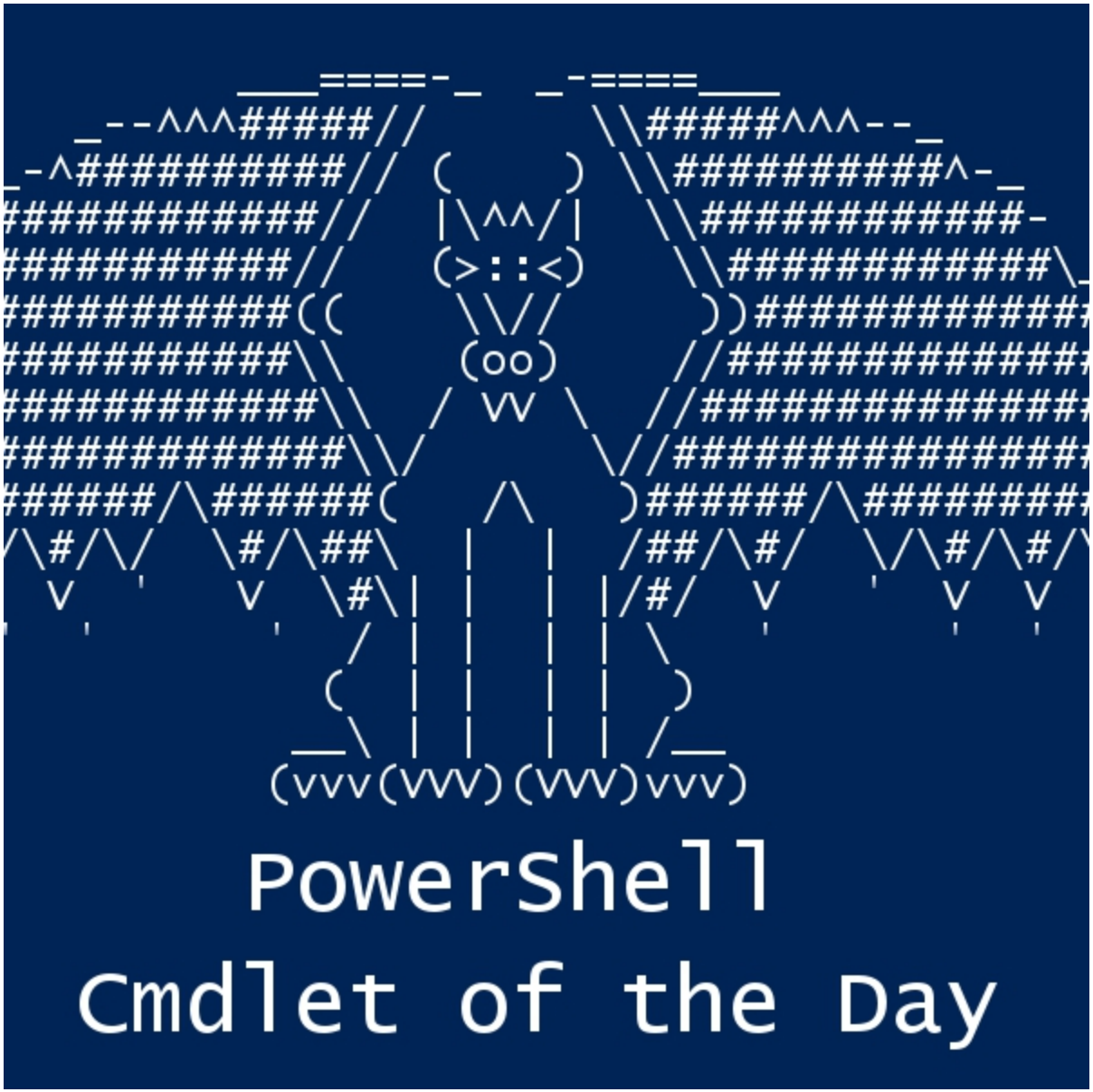
Get-Command [[-Name] <String[]>] [[-ArgumentList] <Object[]>] [-All] [-CommandType <CommandTypes>] [-ListImported] [-Module <String[]>] [-ParameterName <String[]>]
[-ParameterType <PSTypeName[]>] [-Syntax] [-TotalCount <Int32>] [<CommonParameters>]

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)

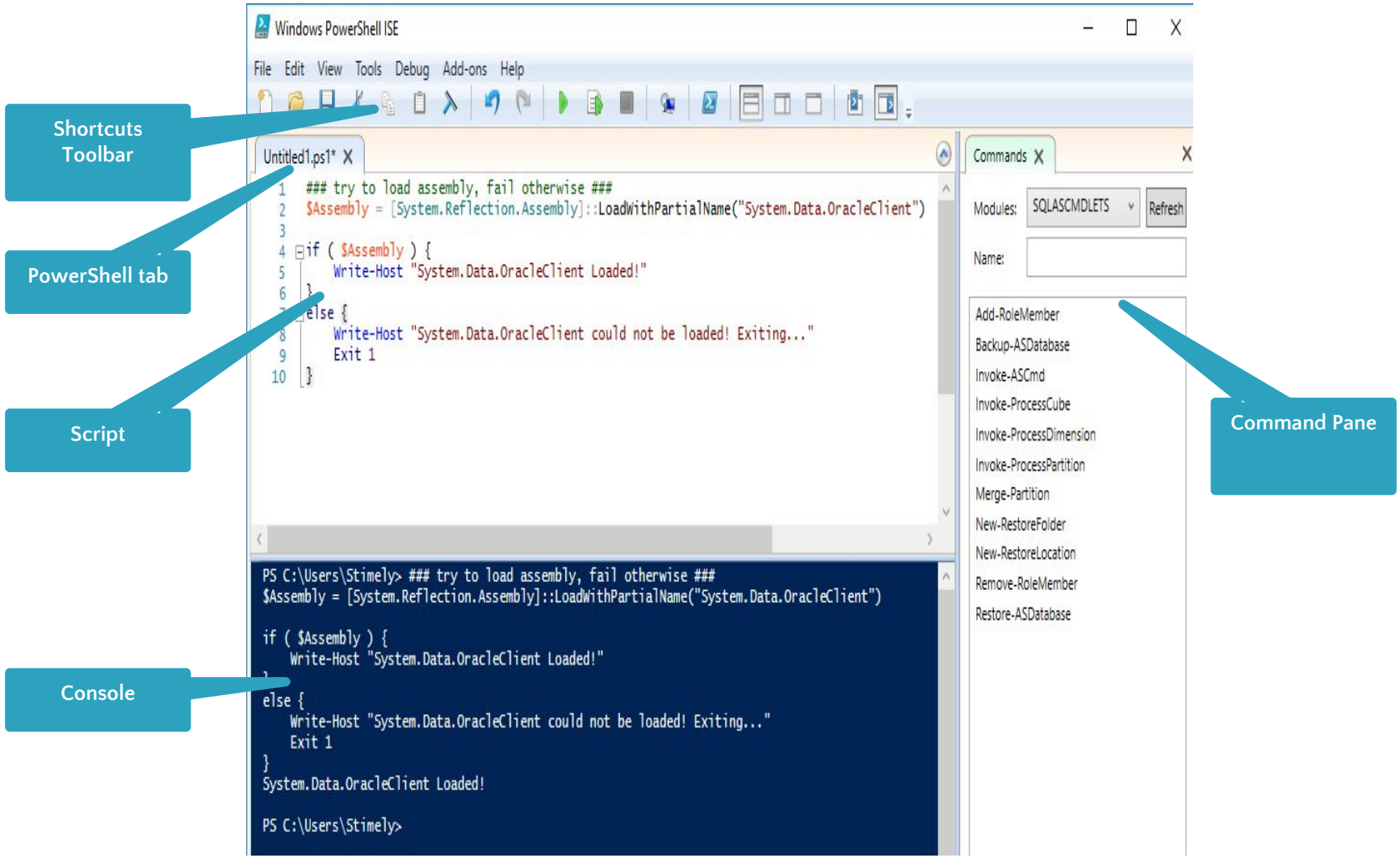

PowerShell
Cmdlet of the Day

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

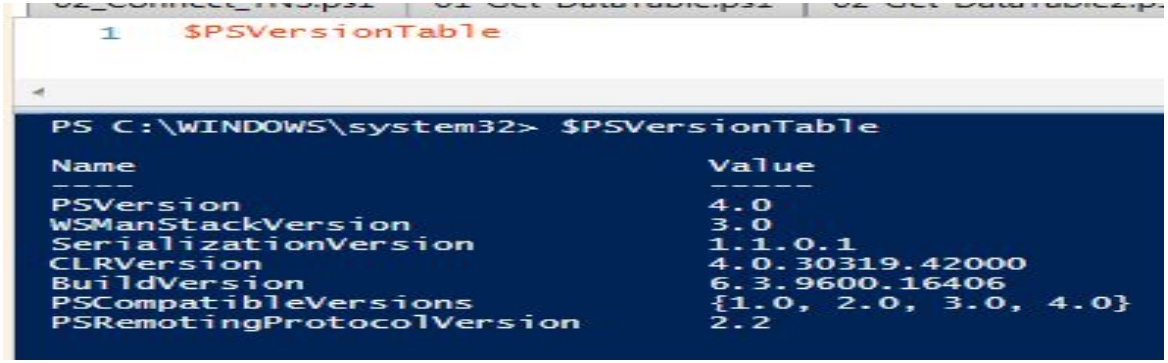
Using the ISE



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:
- http://sev17.com/2010/03/01/querying-oracle-from-powershell-part-2/

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

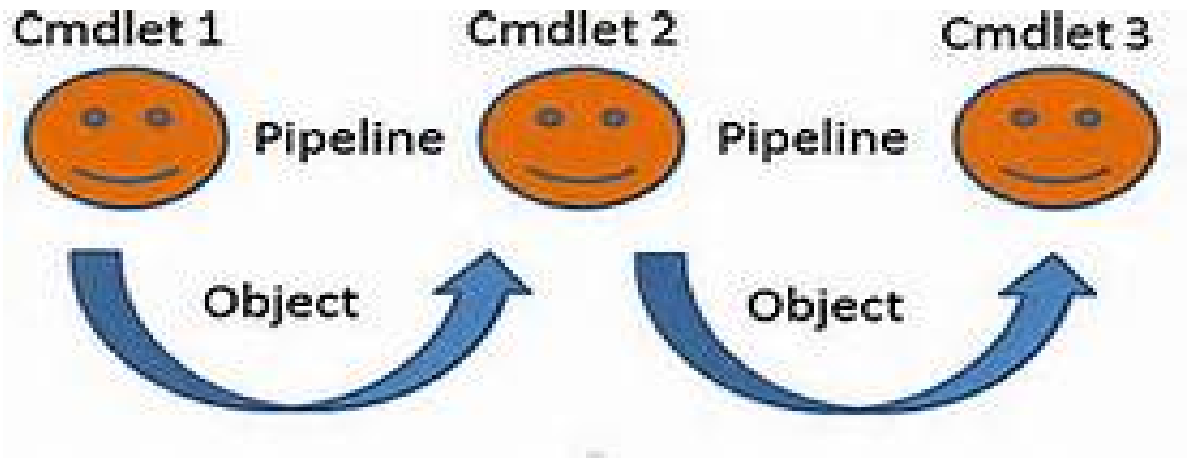
- Common Code Bodies
- Creating reusable functions for scripts with library of Oracle functions
- PowerShell profile
- Common libraries

Automating tasks with PowerShell

- Inputs and Outputs
- Parameters to use
- Functions for automation
- How to automate the code created

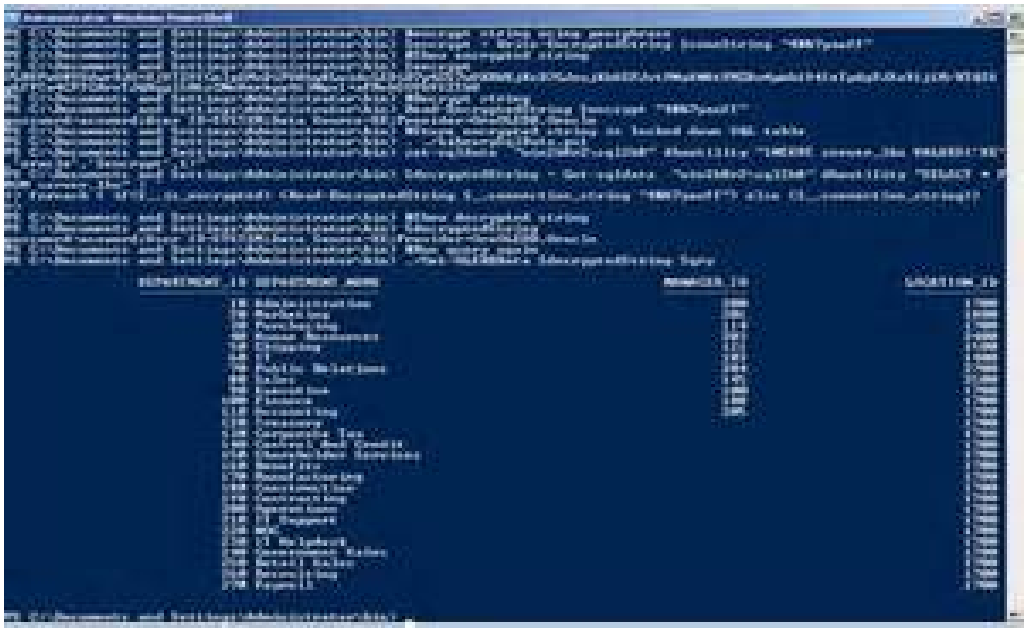
Creating a script library

- 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://www.amazon.com/Instant-Oracle-Database-PowerShell-How/dp/1849688583
- http://powershell.org/wp/
- https://www.youtube.com/channel/UCFX97evt_7Akx_R9ovfiSwQ
- https://www.idera.com/productssolutions/freetools/powershellplus
- http://software.dell.com/products/powergui-freeware/
- https://technet.microsoft.com/en-us/library/hh857339.aspx#BKMK_new50
- https://technet.microsoft.com/en-us/library/dd819514.aspx
- https://blogs.technet.microsoft.com/heyscriptingguy/2012/12/04/use-oracle-odp-net-and-powershell-to-simplify-data-access/
- http://codingbee.net/tutorials/powershell/powershell-run-sql-queries-using-sqlplus/

- 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
  - Nocoug.org

  - FIRST TIME ATTENDEES FREE!