

# Intel® vPro™ Technology Module for Microsoft\* Windows PowerShell\*



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**Intel® vPro™ Technology  
Module for Microsoft\* Windows PowerShell\*:**

**Direct Access to Intel® AMT enables the  
Ability to Fix Problems on the Fly**



# Agenda

- **Introduction**
- **Using Windows PowerShell\***
- **Intel® vPro™ Technology Module for Microsoft\* Windows PowerShell\***
- **GUI Editor Tool**
- **Next Steps**



Intel® vPro™ Technology Module for  
Microsoft Windows PowerShell\*

# Introduction



# Ways to Implement an Intel® AMT Application

- **Intel AMT SDK**

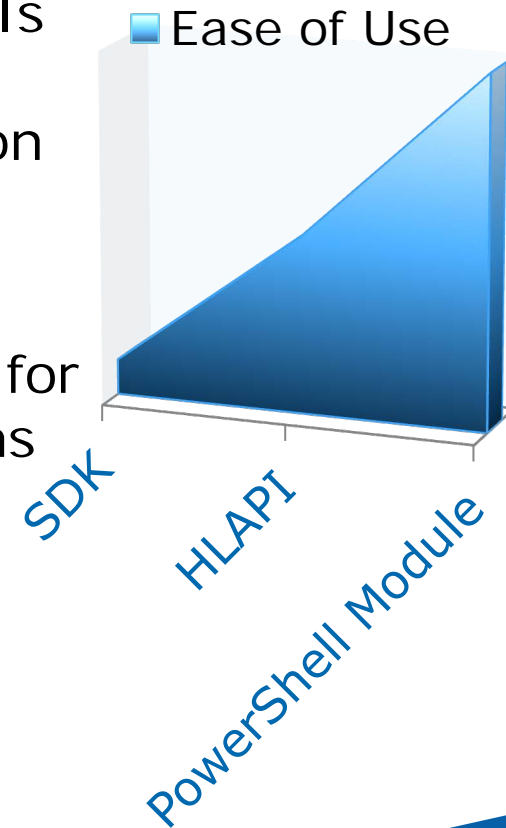
The Intel AMT SDK provides the necessary APIs and libraries to use Intel AMT features. Intel expects effective and collaborative participation from ISVs.

- **Intel AMT High Level API (HLAPI)**

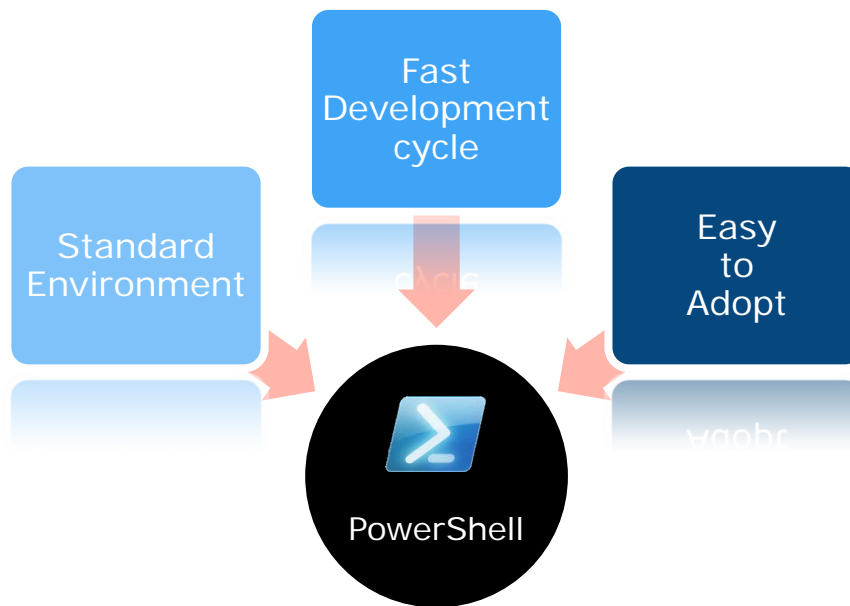
The HLAPI provides an easier to use interface for developing applications that work with systems equipped with Intel AMT.

- **Intel vPro Technology Module for Microsoft\* Windows PowerShell\***

Provides IT Professionals an easy, scriptable mechanism to interact with Intel AMT.



# Microsoft\* Windows PowerShell\*



- Microsoft's implementation of Windows PowerShell\* allows IT professionals to achieve greater control and productivity
- Standard / Simple / Flexible for an IT Professionals
- Adapts many different type systems and data formats to a common user experience
- Provides IT Shops the tools to solve day to day real world opportunities



# Why use Microsoft\* Windows PowerShell\*?

Simple

Free

Everywhere

Quick

Powerful

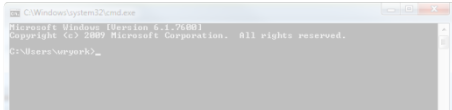


Intel® vPro™ Technology Module for  
Microsoft\* Windows PowerShell\*

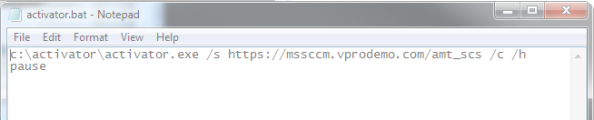
# Using Windows PowerShell\*



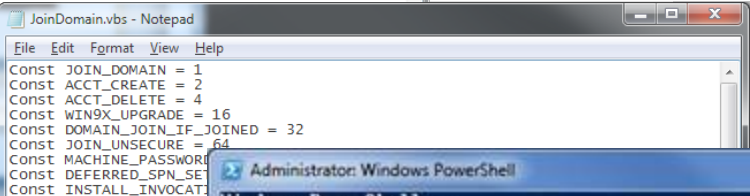
# MS-DOS to Windows PowerShell\*



MS-DOS



Batch Files



VBScripts



# Windows PowerShell\*

## Prerequisites

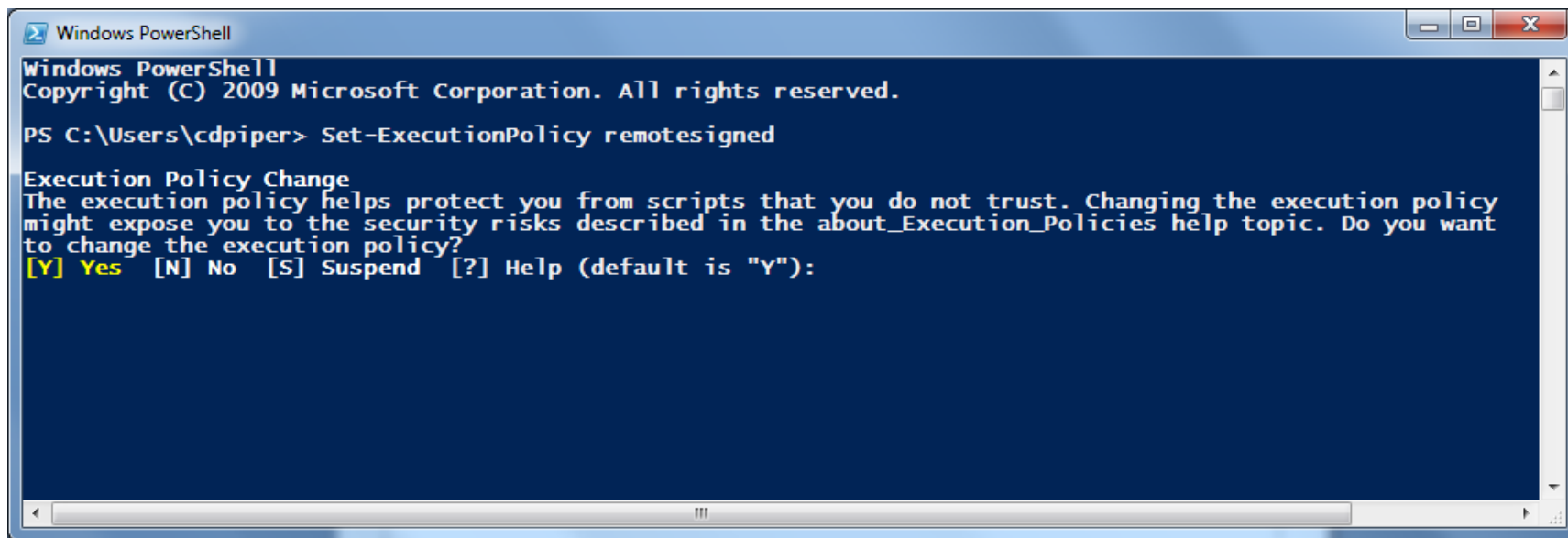
- Windows PowerShell\* is natively included
  - Windows 7
  - Windows Server 2008 R2
- It is released for
  - Windows XP with Service Pack 3
  - Windows Server 2003 with Service Pack 2
  - Windows Vista with Service Pack 1
  - Windows Server 2008
- Windows Management Framework Core package download link

<http://support.microsoft.com/kb/968930>



# Setting up the Environment

- a) Download the Intel vPro Technology Module for Windows PowerShell\* from <http://intel.com/go/powershell> and install the package.
- b) Start -> All Programs -> Accessories -> Windows PowerShell
- c) Run **Set-ExecutionPolicy remotesigned**



```
Windows PowerShell
Copyright (C) 2009 Microsoft Corporation. All rights reserved.

PS C:\Users\cdpiper> Set-ExecutionPolicy remotesigned

Execution Policy Change
The execution policy helps protect you from scripts that you do not trust. Changing the execution policy
might expose you to the security risks described in the about_Execution_Policies help topic. Do you want
to change the execution policy?
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"):
```



- Need to install PowerShell \*version 2.0 before the Intel vPro Technology PowerShell module can be installed.

**Intel® vPro™ Technology Module for  
Microsoft Windows PowerShell\***

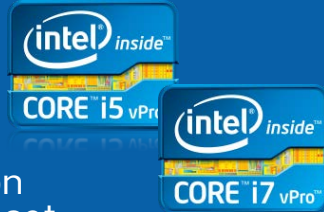
**Intel® vPro™ Technology Module  
for Microsoft Windows PowerShell\***



# Windows PowerShell\* and Intel® vPro™ Technology: Direct Access to Intel® AMT enables an IT Department to Fix Problems on the Fly

## Intel® vPro™ Technology

- Remote power management (turn on and off)
- IDE-redirection
- Serial over LAN
- KVM
- Intel® AMT configuration parameters dynamically set



## Windows PowerShell Scripts

- Integrate into existing tools
- Enables easy automation
- Can access the alarm clock
- Enable features not available in an existing management console



## Direct Access to Intel® AMT

IT Shop Can Solve Problems with No Wait Time

Automate Power Control on Demand with Automatic Boot Up

Can Wake Up System at Given Time w/o Any Network Connection Before

Can "On the Fly" Adjust/Change Intel AMT Parameters

**Lower TCO, Reduce Desk Side Visits, and Improve End-user Productivity**



# Intel® vPro™ Technology Module for Microsoft\* Windows PowerShell\*

## • What is it?

- Provides programming resources and scripts in a standard package that can be deployed and used by Windows PowerShell\*
- All the programming resource are built in the entirely in the .NET framework and all scripts are standard Windows PowerShell .ps1 text) files
- Exposes a late-binding CIM client for accessing Intel® AMT over the WS-MAN protocol
- Exposes HECI driver to Windows PowerShell\* scripts
- Provides Intel® AMT drive abstraction for treating AMT firmware settings as a virtual file system that can be enumerated and copied both locally and remotely
- Provides scriptable certificate enrollment and Kerberos integration services for enterprise setup and configuration
- Scripts for invoking Intel® AMT use cases





# Module Versions

- **Version 1**

- Core CIM client feature complete
- Module Installer
- Features:
  - Power Control (Power On, Off, Restart)
  - Force Boot (Local Hard drive, CD-ROM, PXE)
  - Alarm Clock Configuration
  - System Defense
  - 3PDS (Reading, Writing and Clearing)

- **Version 2**

- Extended Features
- Force Boot IDER Support
- Serial over LAN
- Light Weight GUI built completely with Windows PowerShell
- Treat 3PDS, HW Inventory, Audit and Event Logs as file system
- Local or remote manipulation of Intel® AMT Configuration

## Version 3

- Implementation of Intel® AMT Windows PowerShell\* Drive
- Intel® AMT Power Status, firmware version, and Feature enumeration
- Intel® AMT Hardware Inventory Retrieval
- Intel® AMT Audit Log Retrieval
- Intel® AMT Event Log Retrieval
- Fast Call for Help support
- Editable GUI
- User Consent support
- IDER as Background tasks
- Secure Credential Storage



# Prerequisites

## Client PC

- **Intel® vPro™ based PC** with Microsoft Windows XP \* or later with
  - Microsoft .NET Framework 3.5
  - Windows PowerShell\* 2.0 installed
  - Intel® vPro™ Technology Module for Windows PowerShell\* (Only needed if running locally)
  - Windows Remote Management
- **Intel® Active Management Technology (Intel® AMT) 3.0 or higher**
- **Intel® Management Engine is provisioned**

## IT Console

- **Any PC** with Microsoft Windows XP \* or later with
  - Microsoft .NET Framework 3.5
  - Windows PowerShell \* 2.0 installed
  - Intel® vPro™ Technology Module for Windows PowerShell\*
  - Windows Remote Management (WinRM)



Install the module on Client PC only when you want to run it locally

# Setup the Environment

## Import the Module

```
PS C:\> Import-Module IntelvPro
```

- %UserProfile%\My Documents\WindowsPowerShell\profile.ps1  
This profile applies only to the current user, but affects all shells.

## Profile.ps1

```
Import-Module IntelvPro
```



# Information Cmdlets (command-let)

- **Get FW version**

```
PS C:\> Get-AMTFirmwareVersion 192.168.1.2 -username admin -password P@ssw0rd
```

- **Get Power State**

```
PS C:\> Get-AMTPowerState 192.168.1.2 -username admin -password P@ssw0rd
```

- **Get Event Log**

```
PS C:\> Get-AMTEventLog 192.168.1.2 -username admin -password P@ssw0rd
```

- **Get Hardware Asset**

```
PS C:\> Get-AMTHardwareAsset 192.168.1.2 -username admin -password P@ssw0rd
```



# Secure Intel® AMT Credential in Storage

- This secure storage lets us put the Intel® AMT credentials safely into Windows PowerShell\* to be retrieved later when running the Cmdlets.

```
PS C:\> $cred = Get-Credential
```

```
PS C:\> Write-AmtCredential -Username  
$cred.UserName -Password $cred.Password
```

- Now you can read Intel AMT credential on different PS session by using “-credential \$cred” instead of the long parameter “-username” and “-password”

```
PS C:\> import-module intelvPro
```

```
PS C:\> Read-AmtCredential
```

```
PS C:\> Get-AMTFirmwareVersion –computername  
192.168.1.2 -Credential $cred
```



# Windows PowerShell\* Drive

- Windows PowerShell\* has ability to map Intel® AMT system as a Windows PowerShell\* drive

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

- Map PS drive to client system

- Map Intel® AMT system as a PS drive

```
PS C:\> new-psdrive -name amt -psprovider AmtSystem –  
root "\" -computername 192.168.1.2 -credential $cred
```

- Retrieve Intel® AMT logs

```
PS C:\> Get-Content amt:\logs\EventLog
```

- Enable KVM

```
PS C:\> cd amt:\config\kvm
```

```
PS C:\> Set-Item AccessPointEnabled –Value True
```

```
PS C:\> Set-Item RFBPassword –Value P@ssw0rd
```

```
PS C:\> Set-Item UseStandardPort –Value True
```

```
PS C:\> Set-Item ConsentRequired –Value True
```



# Power Packages

- List Power Policy Schemes

```
PS C:\> cd amt:\config\etc\PowerPolicy\Schemes
PS C:\> ls
```

Name	Value	Type
Desktop: ON in S0	12834f94-10fb-dc4f-968e-1e232b0c9065	System.Guid
Desktop: ON in S0, ME Wake in S3	46732273-dc23-2f43-a98a-13d37982d855	System.Guid

- Change power package

```
PS C:\> Cd amt:\config\etc\PowerPolicy\
PS C:\> Set-Item .\ActiveScheme -value 12834f94-10fb-
dc4f-968e-1e232b0c9065
PS C:\> Set-Item .\ActiveScheme -value 46732273-dc23-
2f43-a98a-13d37982d855
```

6.x/7.0 Desktop	Desktop: ON in S0	{12834F94-10FB-DC4F-968E-1E232B0C9065}
	Desktop: ON in S0; ME Wake in S3, S4-S5	{46732273-DC23-2F43-A98A-13D37982D855}
6.x/7.0 Mobile	Mobile: ON in S0	{11973976-560B-4350-88709812F391B560}
	Mobile: ON in S0; ME Wake in S3/AC, S4-S5/AC	{EE0D8030-C009-4378-AF287868A2DBBE3A}



- You may use either **PS C:\> ls** or **PS C:\> dir** to check available items in a directory.

# Piping Capability

- Remote Power Control

```
PS C:\> Invoke-AMTPowerManagement 192.168.1.2 -username  
admin -password P@ssw0rd -operation reset
```

- Windows PowerShell \* piping capability allows performing operations on a large number of Intel® AMT systems at once

```
PS C:\> type Computers.txt
```

```
192.168.1.2
```

```
192.168.1.3
```

```
PS C:\> Get-Content computers.txt | invoke-  
amtpowermanagement -operation poweron -Credential $cred
```





# One-to-One / One-to-Many IDER

- Perform Intel® AMT IDER and reboot to remote CD/DVD image

```
PS C:\> Start-AMTIDER 192.168.1.2 -iderpath:c:\psmdemo\boot.iso -  
operation:reset -credential:$cred
```

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

```
PS C:\> Stop-AMTIDER
```

- Perform Intel® AMT IDER on multiple client PCs

```
PS C:\> type Computers.txt
```

```
192.168.1.2
```

```
192.168.1.3
```

```
PS C:\> Get-Content computers.txt | Start-AMTIDER  
-iderpath:c:\dos_gold.iso -operation:reset -credential:$cred
```

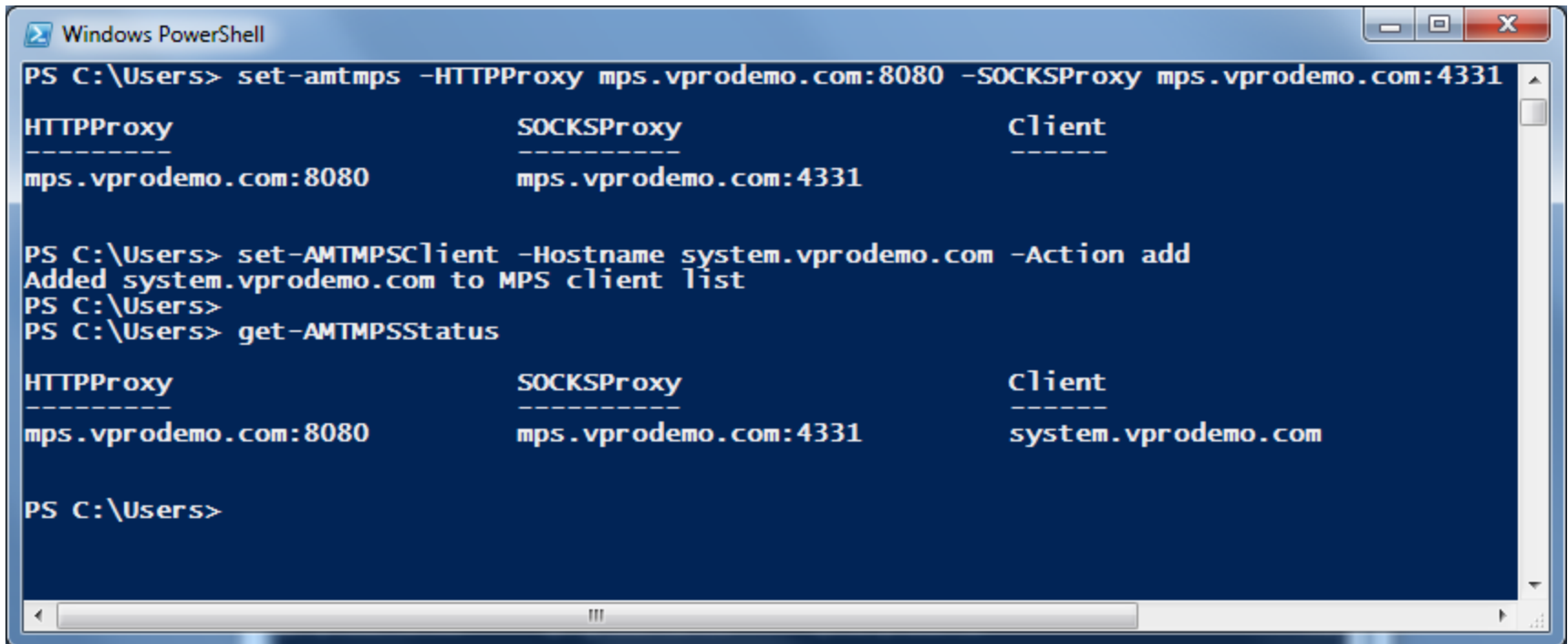
```
PS C:\> Get-AMTIDER
```

```
PS C:\> Stop-AMTIDER
```

```
PS C:\> Get-AMTIDER | Stop-AMTIDER
```



# Intel® Fast Call for Help interface



```
Windows PowerShell
PS C:\Users> set-amtmps -HTTPProxy mps.vprodemo.com:8080 -SOCKSProxy mps.vprodemo.com:4331

HTTPProxy          SOCKSProxy          Client
-----
mps.vprodemo.com:8080  mps.vprodemo.com:4331

PS C:\Users> set-AMTMPSClient -Hostname system.vprodemo.com -Action add
Added system.vprodemo.com to MPS client list
PS C:\Users>
PS C:\Users> get-AMTSPStatus

HTTPProxy          SOCKSProxy          Client
-----
mps.vprodemo.com:8080  mps.vprodemo.com:4331  system.vprodemo.com

PS C:\Users>
```

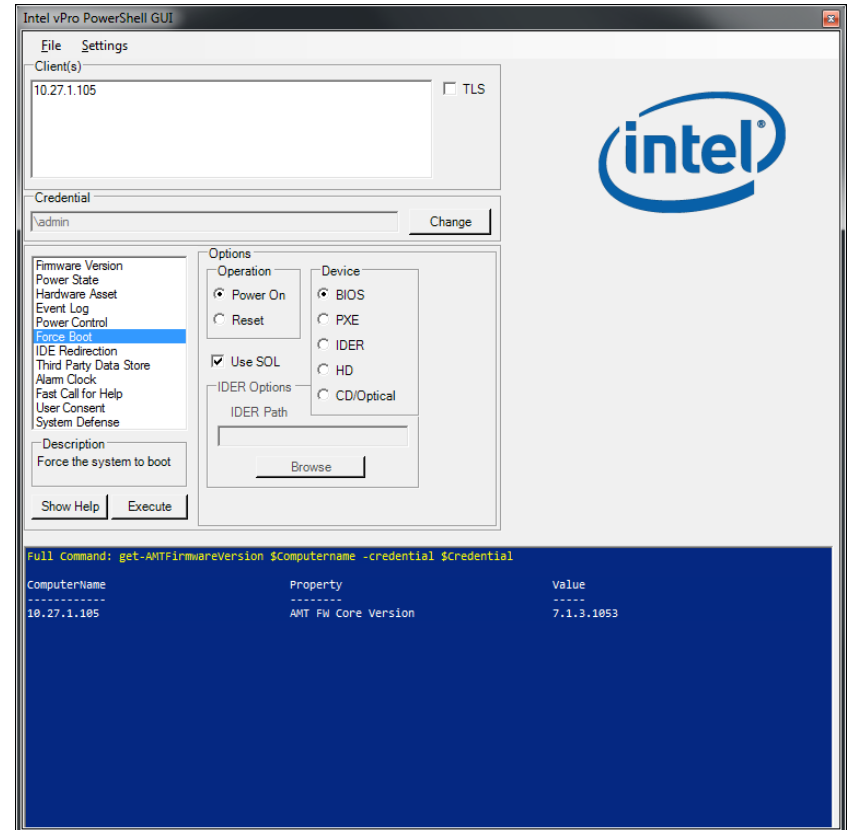
Intel® vPro™ Technology Module for  
Microsoft\* Windows PowerShell\*

# GUI Editor Tool



# Intel® vPro™ Technology Module for Microsoft\* Windows PowerShell\* GUI Editor Tool

- Provides GUI with easy access to the Intel® vPro Technology scripts
- Easily extensible to call any executable, script or cmdlet
- The appearance and behaviour can be greatly customized with the invoke-AMTGUI Editor tool
- Supports digest, Kerberos, non-TLS and TLS modes
- Supports Intel vPro Technology clients with Intel® AMT firmware 3.2 or later



# Introduction

- The Intel® vPro™ Technology Module for Microsoft\* Windows PowerShell \* GUI Editor Tool enables an IT practitioner to design and customize the GUI that is displayed by the invoke-AMTGUI script from the Intel® vPro™ Technology Module for Microsoft Windows PowerShell \*
- The invoke-AMTGUI Editor Tool creates an XML configuration file which the invoke-AMTGUI cmdlet interprets and displays

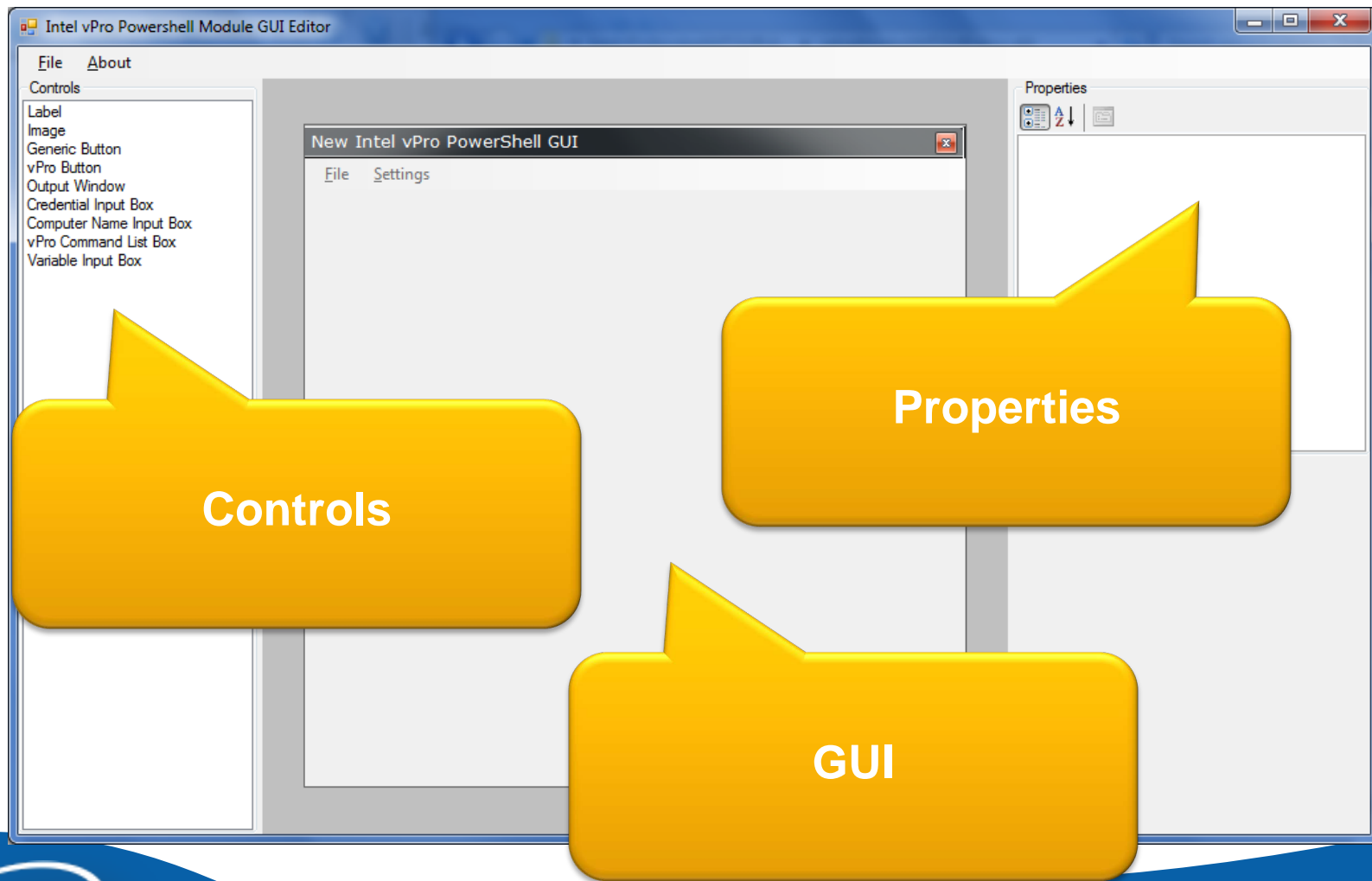


# Download and install package

- a) Download the Intel® vPro™ Technology Module for Microsoft Windows Powershell GUI Editor Tool from <http://www.intel.com/go/powershell>
- b) Start -> All Programs -> Intel PowerShell invoke-AMTGUI Editor



# Windows PowerShell \* invoke-AMTGUI Editor

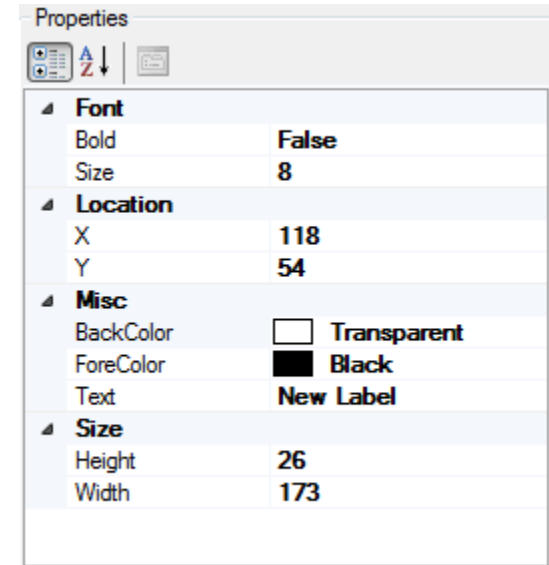


To launch AMT GUI Editor, please click on Start -> All Programs

-> Intel PowerShell invoke-AMTGUI Editor -> PowerShell invoke-AMTGUI Editor 31

# Controls - Label

Use the label control to place a text label on the GUI. The text, font, and color can be edited. One usage of the label is to display information or simple commands to the user.

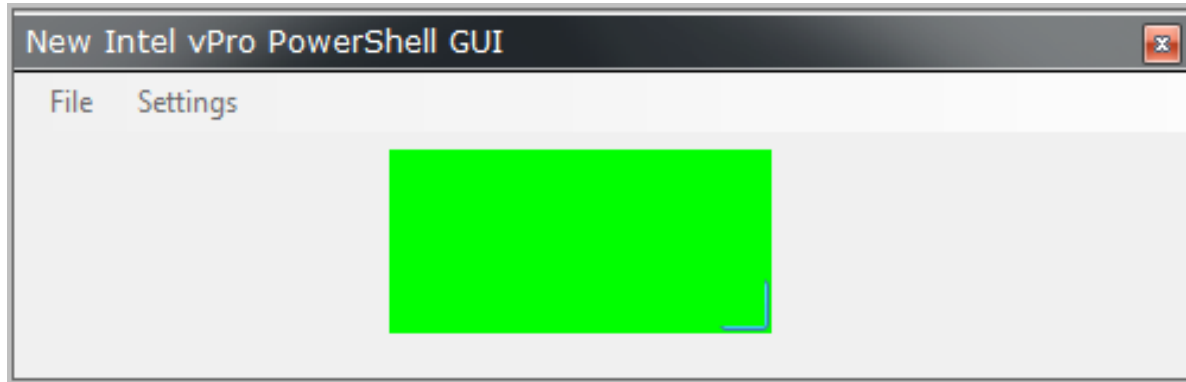


Properties	
Font	
Bold	False
Size	8
Location	
X	118
Y	54
Misc	
BackColor	<input type="checkbox"/> Transparent
ForeColor	<input checked="" type="checkbox"/> Black
Text	New Label
Size	
Height	26
Width	173



# Controls - Image

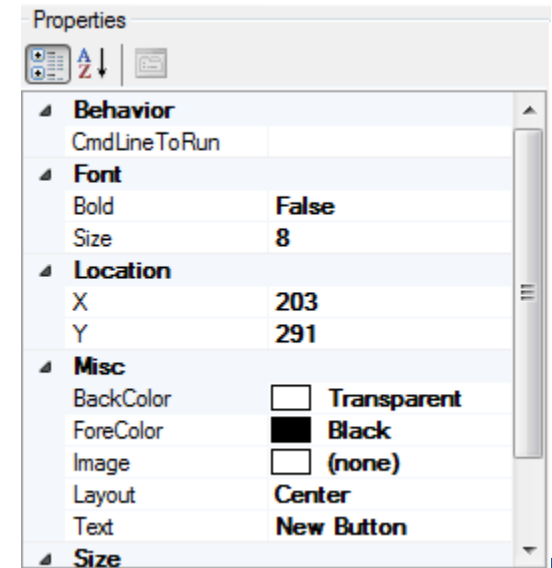
Use the image control to place an image on the GUI. Select an image by clicking on "Image" under properties. The layout property is used to determine how the image is displayed. Images are directly embedded into the XML file so there is no need to distribute them.



Properties	
Location	
X	82
Y	203
Misc	
Image	<input type="checkbox"/> (none)
Layout	Stretch
Size	
Height	74
Width	161

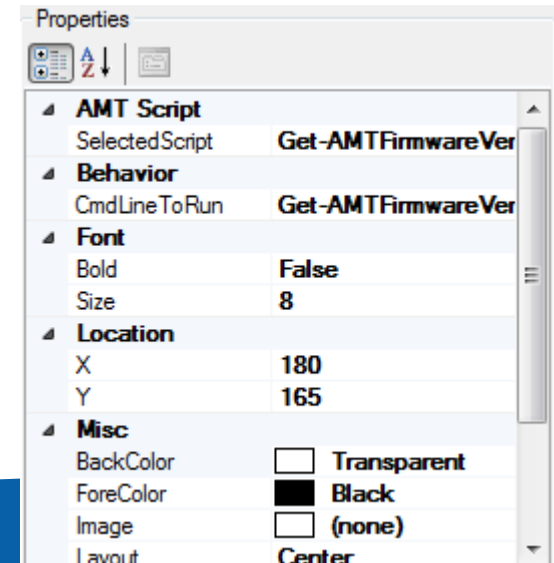
# Controls – Generic Button

The generic button control can call any script or executable. Set the `CmdLineToRun` property to the script, cmdlet or executable to run. Change the text of the button by using the `Text` property. The color can be edited and an image can be added.



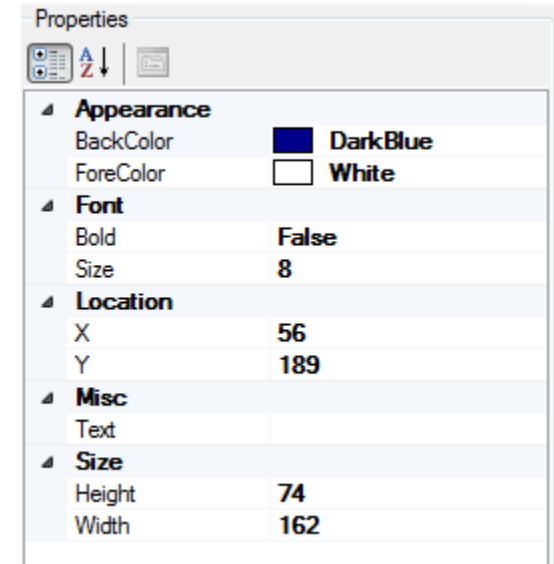
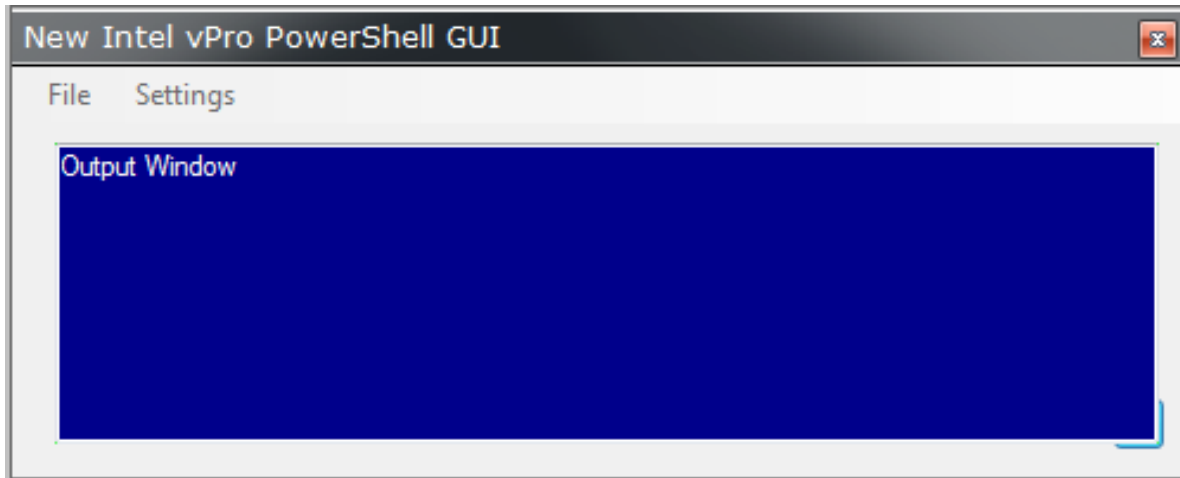
# Controls – Intel vPro Button

The Intel vPro button control allows the easy use of the Intel® vPro™ Technology scripts in the Intel® vPro™ Technology Module for Microsoft Windows PowerShell\*. Choose the script the button runs through the SelectedScript property. If a script has parameters they are displayed below the Properties window. This allows for the customization of the script. These parameters are hardcoded into the button and are used when the user presses the button.



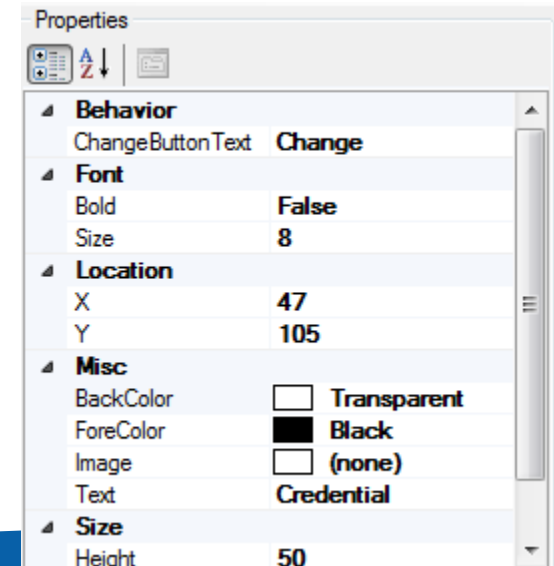
# Controls – Output Window

The output window control displays the output from scripts and applications run from the GUI.



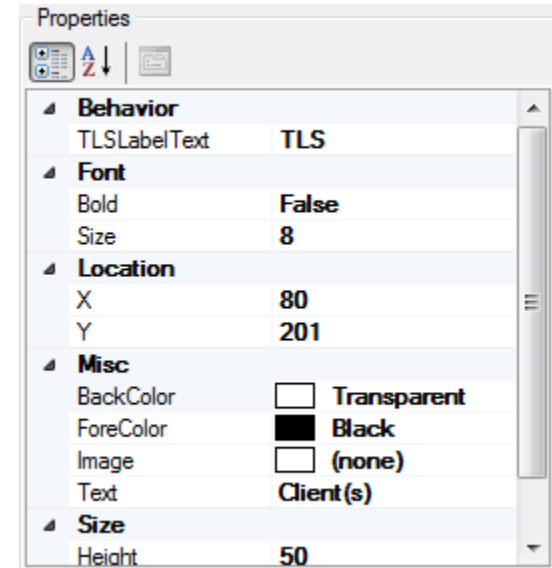
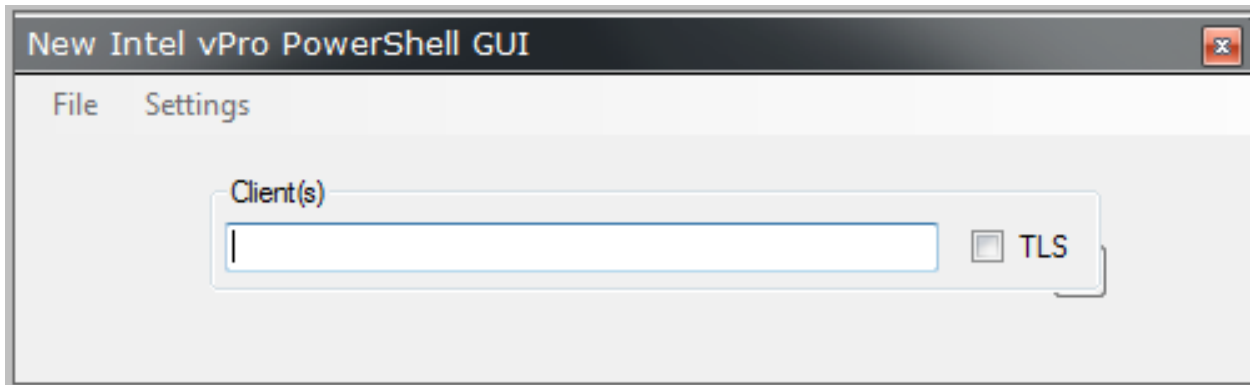
# Controls – Credential Input Box

There is a built in variable `$credential` that is passed to all built in Intel® vPro™ Technology scripts. If a credential input box is added then the user can edit the credential variable at runtime. It is not necessary to add this control since the credentials can be passed into the `invoke-AMTGUI` script when it is run. Any script can use the `$credential` variable.



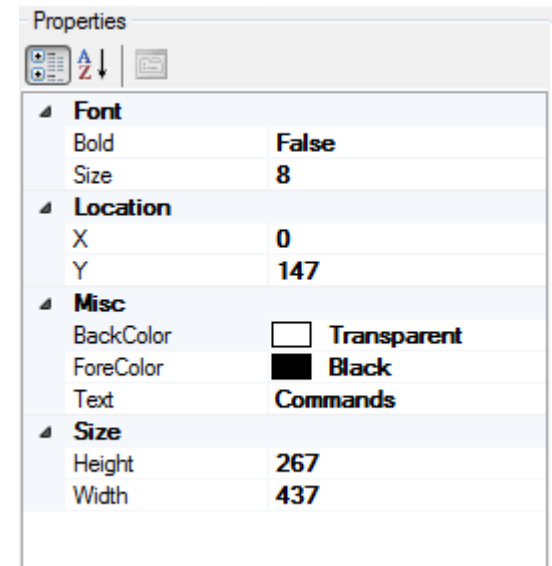
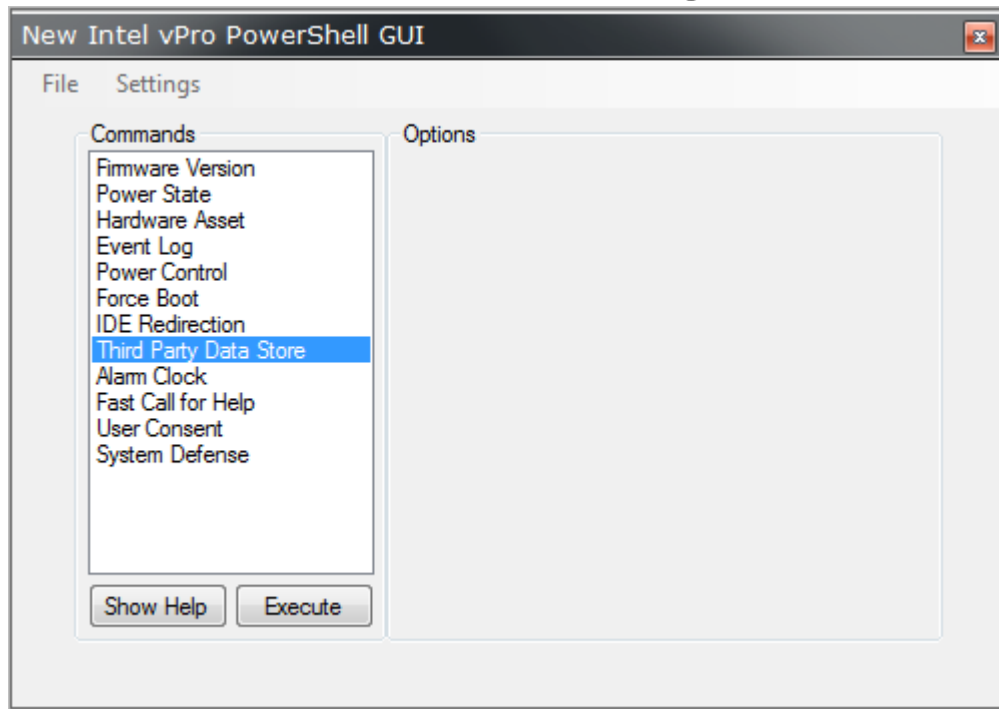
# Controls – Computer Name Input Box

Adding the computer name input box to the GUI allows the user to enter in hostnames. Any hosts in this box are automatically used by the Intel® vPro™ Technology scripts. The computer names are stored in the variable \$computerName that is available to any script.



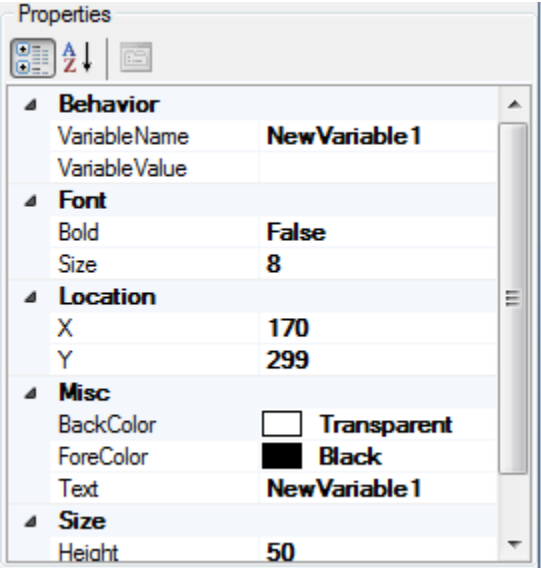
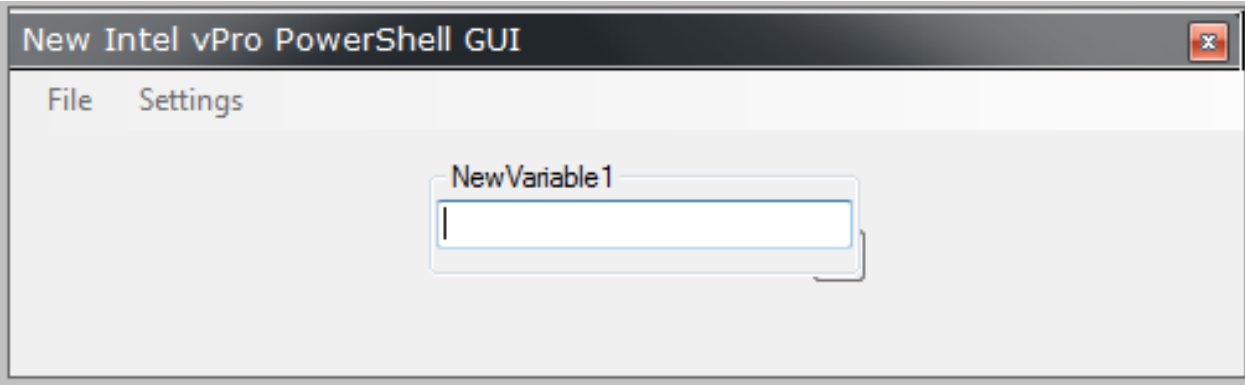
# Controls – Intel vPro Command List Box

The Intel vPro Command List Box control contains all the Intel® vPro™ Technology scripts. The contents of this control are not editable. Use this control to give the user access to all the Intel® vPro™ Technology scripts and their settings.



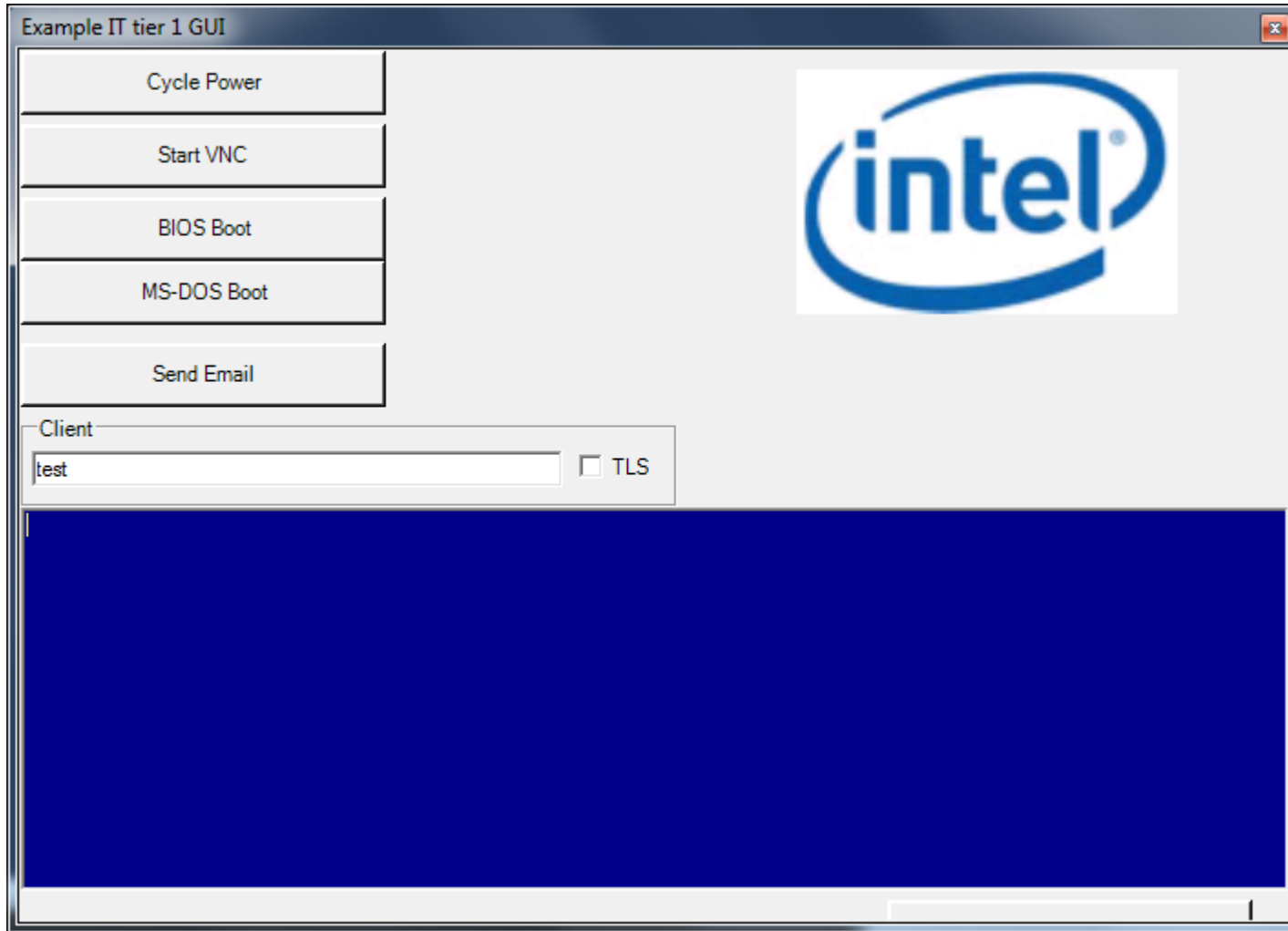
# Controls – Variable Input Box

If you have a custom variable that you would like to allow the user to edit it can be exposed using the variable input box.





# Example IT Tier 1 GUI



# How to load a GUI XML file

**Import-Module IntelvPro**

**Invoke-AMTGUI -xmlConfig fileName.xml**



# Intel® vPro™ Technology Module for Microsoft\* Windows PowerShell\*



**Imagine what you can do**



Intel® vPro™ Technology Module for  
Microsoft\* Windows PowerShell\*

Q&A



Intel® vPro™ Technology Module for  
Microsoft \*Windows PowerShell\*

# Backup



# Links

- **Intel® vPro™ Technology module for Microsoft\* Windows PowerShell\* and GUI Editor**

- <http://www.intel.com/go/powershell>

- **Intel PowerShell Blogs**

- <http://communities.intel.com/people/cdpiper?view=overview>

- **PowerShell – Microsoft Script Center**

- <http://technet.microsoft.com/en-us/scriptcenter/bb410849>

