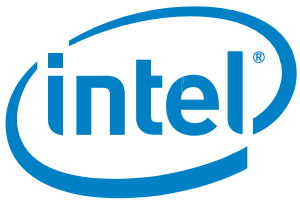

Intel® SCS 9.0 Solutions Framework with SSD Pro Series Plug-in Use Case Reference Design

Using Intel® SCS 9.0 to discover platform capabilities and configure Intel® SSD Pro Series drives.

Revision 1.0

December 2013

Document ID: 0000

Revision History

Revision	Revision History	Date
1.0	Initial release.	December 2013

Contents

Figures

1 Preface

Intel® vPro™ Technology Use Case Reference Designs are intended to provide a working model solution that highlights one or more features or use cases for Intel® vPro™. These reference designs can be implemented in a laboratory setting to help you understand the feature or use case being highlighted, and then adapted for implementation in your production IT environment.

1.1 Document Scope

This document covers how to set up Intel® Setup and Configuration Software version 9.0 (Intel® SCS) Solutions Framework to discover, configure and maintain Intel® Platform Host Solutions and Technologies.

This document **does not** cover installation and configuration of Intel® SCS 9.0 RCS and Console neither configuration of Intel® AMT - Intel® Active Management Technology- please see Intel(R)_SCS_User_Guide.pdf included in Intel® SCS 9.0 downloaded package for more details.

1.2 Intended Audience

This document is intended for Information Technology (IT) professionals who have knowledge of Intel® Setup and Configuration Software 9.0 (Intel® SCS) and Windows* PowerShell.

1.3 Related Documentation and Software

The following documents may be useful for further understanding of this topic.

Intel SCS Download:

http://software.intel.com/en-us/articles/download-the-latest-version-of-intel-amt-setup-and-configuration-service-scs/

Intel® vPro™ Expert Center

http://communities.intel.com/community/openportit/vproexpert

Windows* PowerShell
http://technet.microsoft.com/en-us/library/ff950685.aspx

Intel® SSD Drives

http://www.intel.com/go/ssd

2 Introduction

This use case reference design allows you to take advantage of the Intel® Setup and Configuration Software 9.0 (Intel® SCS) to discover supported Intel® platform technologies on host PC platform and using SSD Pro Series Plug-in for configuring and maintaining Intel® SSD Pro 1500 Series solid state drives.

NEW Intel® Setup and Configuration Software (Intel® SCS) version 9.0 allows you to discover supported Intel® technologies on the Intel® based platforms in your enterprise environment, configure the Intel capabilities on those platforms, and manage IT policies for them.

2.1 Required Software

In order to take advantage of Intel SCS based setup and configuration for, you will need the following components:

Software	Software
Intel® Setup and Configuration Software (Intel® SCS)	This is the software package that contains Intel® SCS 9.0 Solutions Framework components and will perform Platform and Solution Discovery and maintenance. It will also perform the actual setup and configuration of Intel® AMT on Intel® vPro™ technology based platforms. http://www.intel.com/go/scs
Intel® Solid-State Drive Toolbox	Intel® Solid-State Drive Toolbox (Intel® SSD Toolbox) is drive management software that allows you to see actual SSD parameters and settings on local system. http://www.intel.com/go/ssdtoolbox
Windows* PowerShell	Windows PowerShell is not included by default in Windows XP, Windows Vista, and Windows 2003 Server. Please ensure Windows PowerShell 2.0 is installed prior to use: http://technet.microsoft.com/en-us/scriptcenter/dd772288.aspx or http://support.microsoft.com/kb/968929

2.2 Supported Intel® Platform Technologies and Solutions

2.2.1 Discoverable Intel® technologies and products

Intel® SCS 9.0 Solutions Framework and Standalone Platform Discovery Utility support discovery of following Intel® technologies and products.
Each solution that is supported by the Intel® SCS 9.0 Solutions Framework is assigned a Globally Unique Identifier (GUID). To run some of the scripts, or use some of the API commands, you will need to supply this GUID

Solution	GUID
Intel® Smart Connect Technology	**a543b148-407c-419d-ab91-6a26af664828**
Intel® AMT - Intel® Active Management Technology	**a5e80b51-5429-4904-b412-589470884e97**
Intel® Solid-State Drive Professional 1500 Series (Intel® SSD Pro Series)	**0b93a9cb-64b1-43ed-bc33-e5b0b8692694**
Intel® Anti-Theft Technology	**8f14b6c3-9981-4347-8f05-08582591f486**

Having Intel® SCS 9.0 Remote Configuration Service (RCS) installed in Database Mode on management server allows it to receive Platform and Solution discovery data from Solutions Framework or Platform Discovery Utility executed locally on host PC using Windows Management Instrumentation (WMI).

In version 9.0 of Intel® SCS the Console only supports viewing the Solution Discovery data. Platform Discovery Utility is not capable of discovering neither reporting solution data to RCS. Please use Intel® SCS Solutions Framework with SSD Pro Series Plug-in as described in section 4.

2.2.2 Configurable Intel® technologies and products

Intel® SCS 9.0 Remote Configuration Service (RCS) and Solutions Framework support configuration of following Intel® technologies and products:

- Intel® AMT - Intel® Active Management Technology via RCS or Host Based Configuration
- Intel® Solid-State Drive Professional 1500 Series (Intel® SSD Pro Series) via Solutions Framework with SSD Pro Series Plug-in.

As new releases of the Intel® SCS are released, support for additional products will be added.

3 Intel® Platform Discovery Utility

Intel® SCS 9.0 provides two methods to discover "top-level" data from certain products on Intel® platform, even if plugins were not yet created for those products.

One of them - Standalone Platform Discovery Utility can discover Intel® platform technologies even without Intel® SCS 9.0 Solutions framework and/or Intel® Local Management Service being installed on target host platform.

You can use Standalone Platform Discovery Utility to:

- **List** currently discoverable Intel® platform technologies and solutions with their assigned Globally Unique Identifiers (GUID) instead of performing actual discovery
- **Discover** Intel® platform technologies on current host PC with discovery data outputted to console or piped to specified XML file.
- **Report** Intel® platform technologies discovery data to Intel® SCS 9.0 RCS database instead of outputting to console or file.

For details of using Intel® Platform Discovery Utility please refer to Appendix A.

3.1 Required software and permissions

Intel® Management Engine Interface (MEI) Driver is strongly recommended to be installed on host PC in order to fully discover presence and state of Intel® Active Management Technology.

Without Intel® MEI Driver the Intel® AMT will be discovered as present but it may be incorrectly reported as "unconfigured".

Platform Discovery Utility is located in the ***Solutions_Framework\PlatformDiscovery*** folder of Intel® SCS 9.0 downloaded package.

To use this utility you must deploy the **PlatformDiscovery.exe** file to the target host PC platform and execute it locally with administrator privileges e.g. via your **ISV remote in-band management SW solution.**

3.1.1 WMI access to Intel® SCS 9.0 Remote Configuration Service

Platform Discovery Utility can report discovered solutions to Intel® SCS 9.0 Remote Configuration Service (RCS) using Windows Management Instrumentation (WMI).
In order to report discovery data to RCS Database account running Platform Discovery Utility will require access to ***Intel_RCS*** WMI namespace on server running Intel® SCS 9.0 Remote Configuration Service.
Same access permissions will be also required in order to report discovered detailed state of Intel® AMT technology and configuration of Intel® AMT technology using Intel® SCS 9.0 AMT Configurator Utility – ACU.exe.
Intel® SCS 9.0 provides separate Remote Configuration Service Utility located in **Utils** folder of Intel® SCS 9.0 downloaded package

For more details on use of Remote Configuration Service Utility please refer to User Guide located in same folder in *Intel(R)_SCS_RCSUtility.pdf* file.
RCS Utility must be "Run as administrator" on server running Intel® SCS 9.0 Remote Configuration Service.

To assign ***Intel_RCS*** WMI namespace access to user named for example: "***VPRODEMO\ACU***" you have to use following command:

RCSUtils.exe /Permissions Add ACU /RCSnamespace RCS

NOTE

*To execute PlatformDiscovery.exe with administrator privileges on the target host PC platform in Start Search box type **cmd.exe** right click it and choose **Run as administrator** and then use one of commands described in following sections.*

3.2 Reporting Platform Discovery and Intel® AMT Discovery to Intel® RCS database

Discovery Utility used with ***-ReportToRCS*** *switch* creates entry in RCS database for host computer that does not **even** support Intel® AMT technology or with Intel® AMT technology in unconfigured state (factory default state of Intel® AMT technology).
This host system entry will be visible in Intel® SCS Console.

If Intel® AMT is in unconfigured state the system will appear as "Unmanaged".

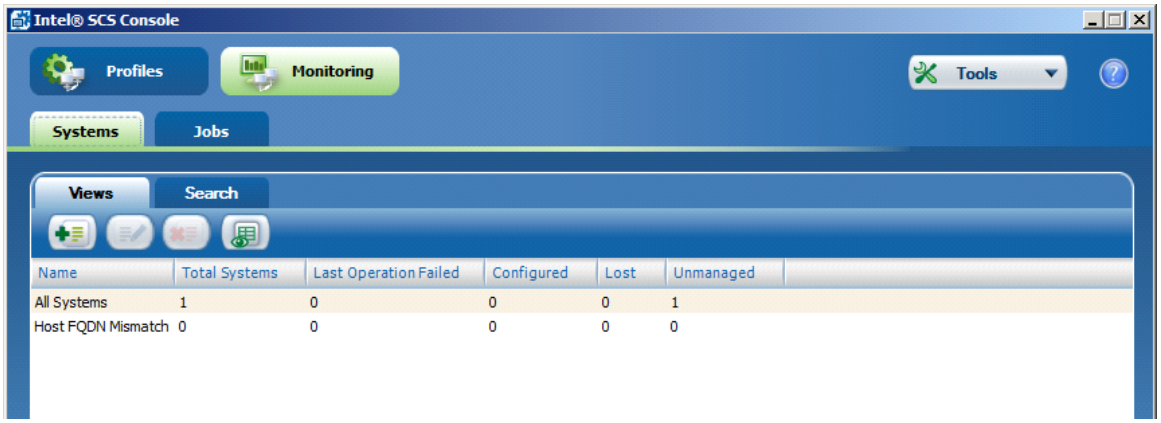

Figure 1: New Host platform entry in RCS Database in Intel® SCS Console

If you open newly discovered platform in Intel® SCS Console you will find more details of this platform its state and

As this sample system had Intel® AMT technology in unconfigured (factory default) state Out-of-Band Intel® AMT discovery data was not available (unconfigured Intel® AMT will not respond to RCS over network interface) and Intel® AMT SKU (manageability feature set) may be incorrectly assumed to be Intel® Standard Manageability only!

Choosing to Move to Managed State (by right click on listed system) in Intel® SCS Console does not change system data for systems with unconfigured Intel® AMT Technology.

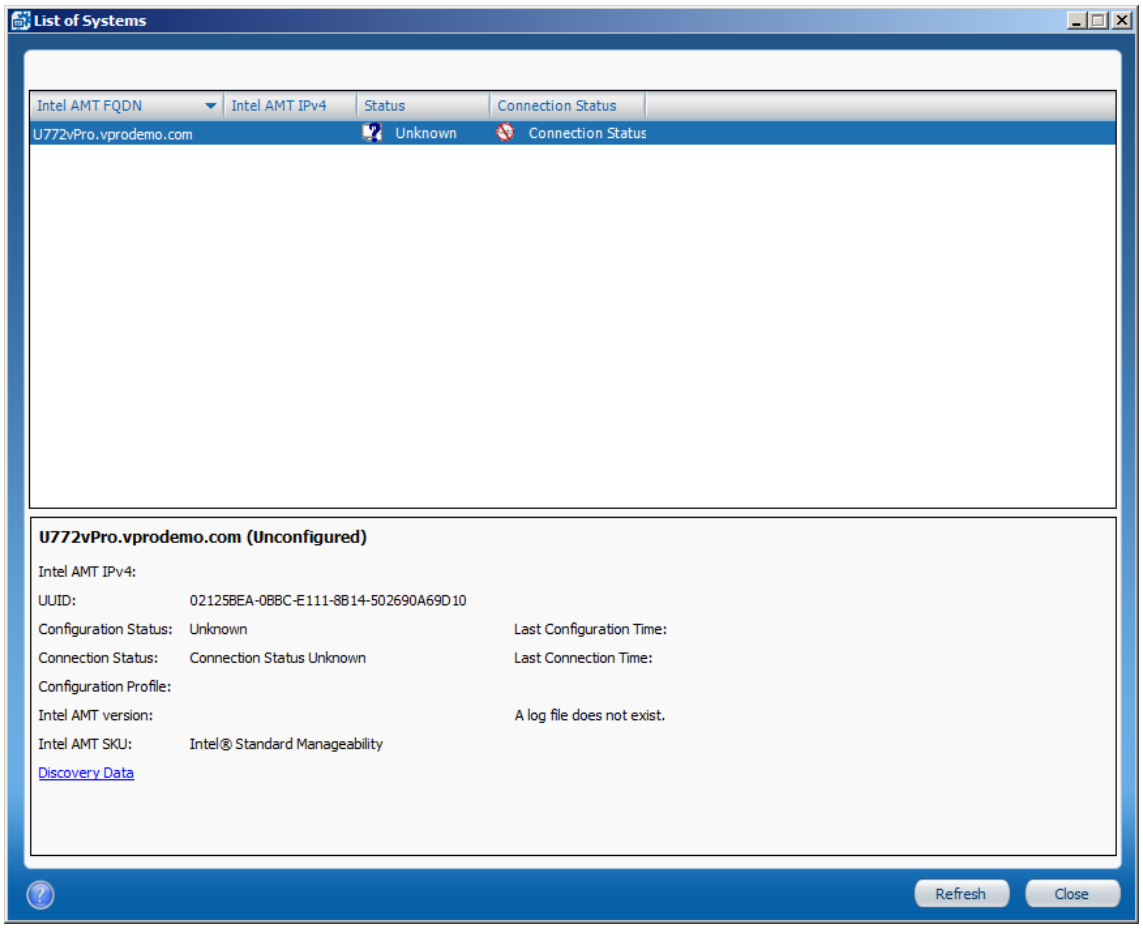

Figure 2: New Host platform entry in RCS Database upon Platform Discovery with ReportToRCS switch

Selecting **Discovery Data** shows no additional information as version 9.0 of Intel® SCS the Console only supports viewing the Solution Discovery data and Platform Discovery Utility is not capable of discovering neither reporting solution data to RCS.

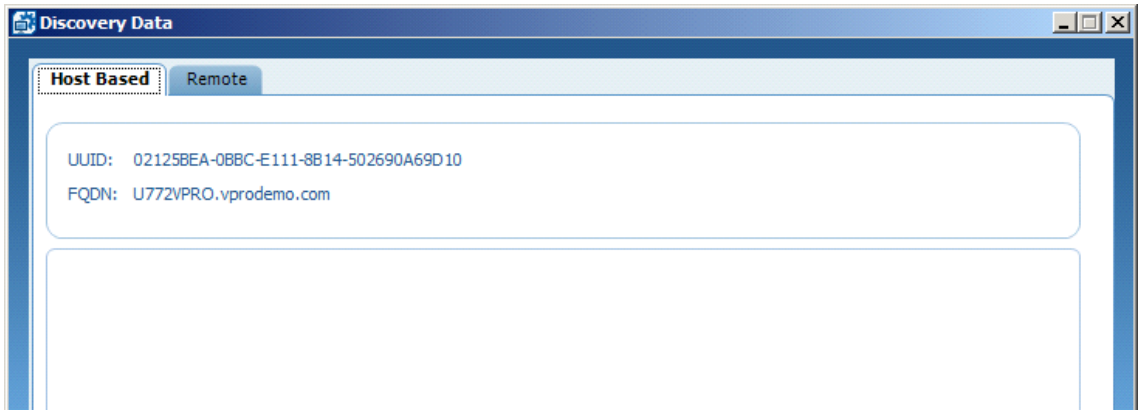

Figure 3: Host Based Discovery Data (no solution discovery yet)

If you then run Intel® AMT Configurator Utility locally to discovery and report Intel® AMT technology state to RCS DB it will update system entry with Intel® AMT Host Based Discovery data.

Copy two files from ***Configurator*** folder of Intel® SCS 9.0 downloaded package: ***ACUConfig.exe*** and ***ACU.dll*** to target host platform then run (as administrator) following command on host platform:

ACUConfig.exe SystemDiscovery /NoFile /NoREgistry /ReportToRCS /RCSAddress infrastructure.vprodemo.com /WMIUser vprodemo\ACU /WMIUserPassword P@ssw0rd /RCSBusyRetryCount 10

Where:

infrastructure.vprodemo.com – is FQDN of server running RCS

vprodemo\ACU – is AD User name with WMI Access to **Intel_RCS** name space (see next section)

"P@ssw0rd" – is selected vprodemo\ACU user password.

For details on using AMT Configurator Utility please see Intel® Setup and Configuration Software (Intel® SCS) User Guide - Intel(R)_SCS_User_Guide.pdf file in main folder of Intel® SCS 9.0 downloaded package.

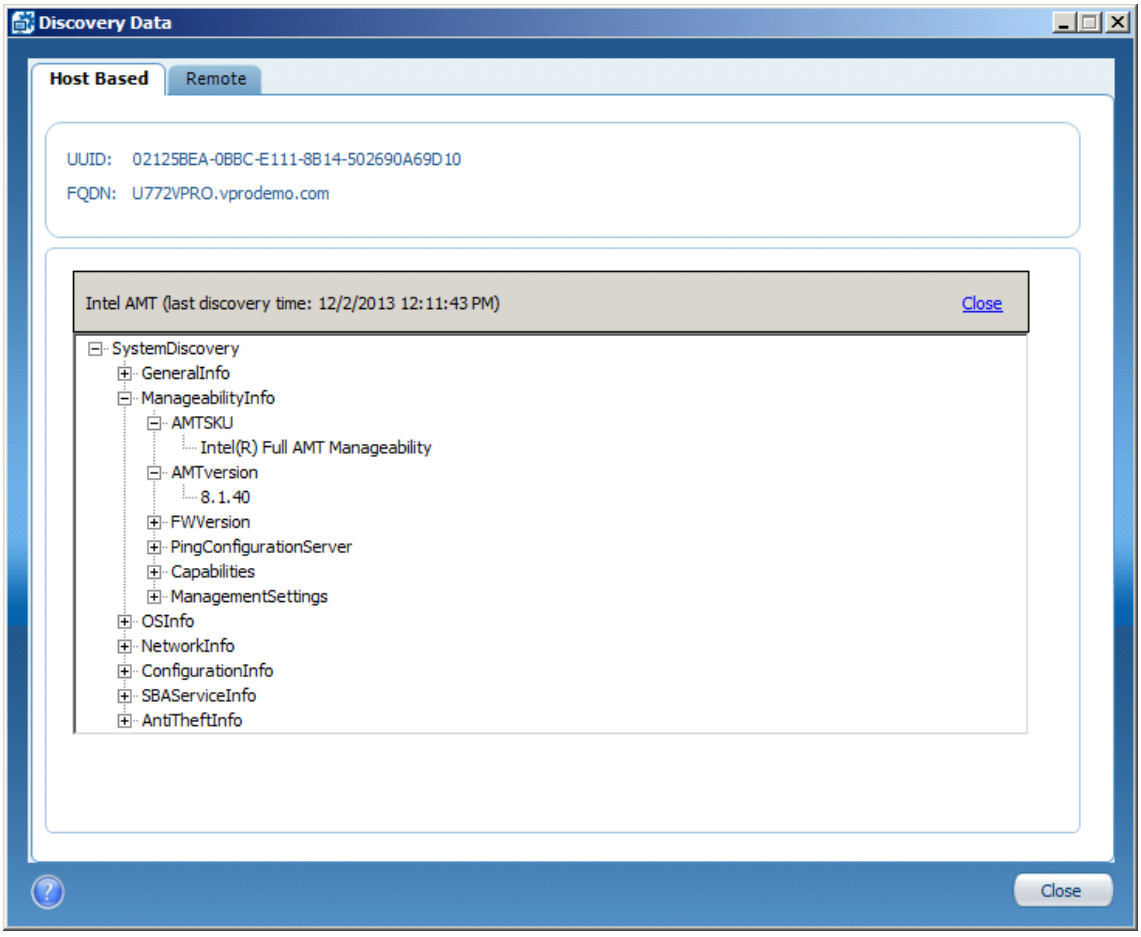

Figure 4: New platform AMT Host Based Discovery Data in Intel® SCS Console

Now full Intel® AMT details are visible even if Intel® AMT technology is still yet to be configured.

4 Intel® SCS Solutions Framework

Until now, Intel® Setup and Configuration Software was capable of discovering and configuring only Intel® Active Management Technology –this capability remains one of key features of NEW Intel® SCS 9.0.
But the platforms in your organization can include many other Intel® products or technologies, some of which you might not even know about!

The Intel® SCS Solutions Framework was created to extend the discovery and configuration capabilities of Intel® SCS.

4.1 Overview

NEW Intel® SCS 9.0 has been re-architected in order to provide a modular framework on both the management console and the managed clients.
Intel® SCS version 9.0 Solutions Framework allows to add "plugin" functionality and feature sets into an existing Intel® SCS installation.

Solutions "plugin" allow discovering, configuring and maintaining various Intel® products or technologies available on Intel® based platforms

The Intel® SCS framework with solutions "plugin" lets you gather platform capabilities and their configuration state and store it in the Intel® SCS Remote Configuration Service (RCS) database, or pull it from XML files into your own existing database.

Intel SCS's modular design leverages industry-standards like WMI and Windows* PowerShell* to support integration with third party management SW solutions

4.2 Intel® SCS Solutions Framework Architecture

Intel® SCS 9.0 Solutions Framework includes these main components:

• **Host Solution Manager** –Runs on host PC platform, acts as an In-Band agent SW and exposes an API that uses Windows Management Instrumentation (WMI) and is the single access point for all plugins that want to use the Framework. Host Solution manager can be accessed remotely (over WMI) from management server or locally from host OS (typically by 3rd party PC management SW).

NOTE

Host Solution Manager is an In-Band solution, relies on running and healthy OS and its TCP/IP stack and **is independent of Out-of-Band Intel® Active Management Technology**.

Intel® Active Management Technology configuration is separate process that does not involve Solutions Framework and is performed by Intel® SCS 9.0 RCS and/or Intel® AMT Configurator Utility (e.g. .for Host Based Configuration).

Configuring Intel® Active Management Technology on target system HW will help to determine target platform power state, allows turning on/waking up target system and/or faulty OS repair.

• **Host Plugins** - A separate plugin for each solution handles configuration requests and requests for discovery data and Key Performance Indicators (KPI), as supported by the solution

• **Profile Editor Plugins** - A separate plugin for each solution handles requests to create/update configuration profiles with the settings supported by the solution.

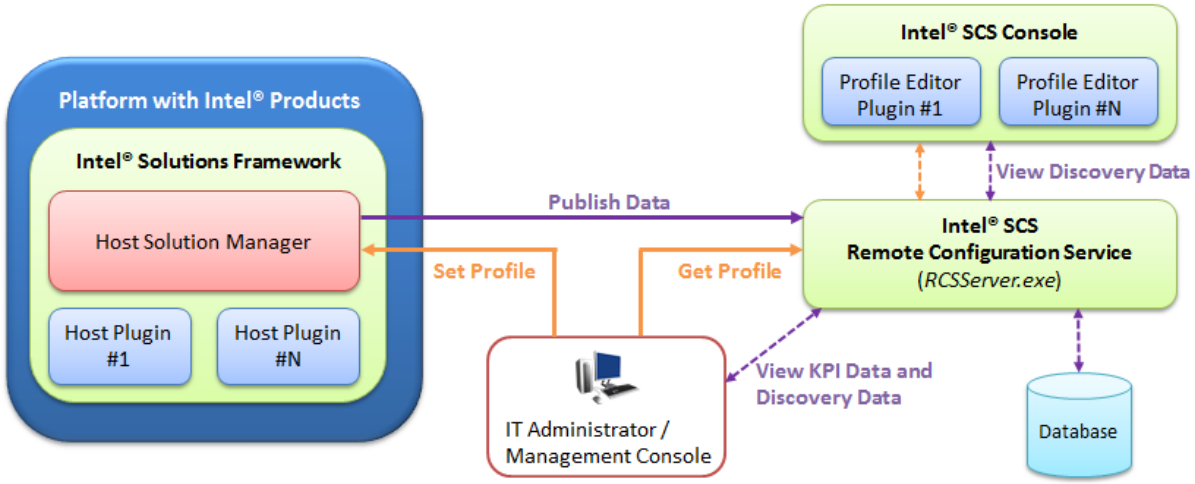

Figure 5: Intel® Solutions Framework Architecture

4.3 Required software and permissions

4.3.1 Software components

Depending on method used to configure supported Intel® platform solution (currently only Intel® SSD Pro Series) following Intel® SCS Solutions Framework components will be required.

Framework Component	Component Installation and Execution place	Required -Y/N
Host Solution Manager	Host (target) Platform	Mandatory for platform and solutions discovery and solutions configuration (except of Intel® AMT)
Host Plugins	Host (target) Platform	Mandatory for each supported solution discovery and configuration

Profile Editor Plugins	Computer running Intel® SCS Console	Not required XML profile file based configuration of Intel® SSD Pro Series. Mandatory for Intel® RCS profile based Intel® SSD Pro Series configuration.
Intel® RCS and Intel® SCS Console	Computer running Intel® RCS Computer running Intel® SCS	Not required XML profile file based configuration of Intel® SSD Pro Series. Mandatory for Intel® RCS profile based Intel® SSD Pro Series configuration.

Windows* PowerShell version 2.0 or higher will be must be installed on each computer where you want to use sample PS scripts provided with Intel® SCS Solutions Framework.
You can check the PowerShell version using this PowerShell command: get-host.

NOTE

The use of PowerShell and the supplied scripts is optional. You can also use Windows Management Instrumentation (WMI) to call the methods directly from the Framework API (see Framework API Reference - Intel(R)_Solutions_Framework.pdf on page 13).

4.3.2 WMI Permissions

Access to Intel® SCS Solutions Framework API is restricted using following WMI Namespaces:

- ***Intel_SCS_Framework*** – this namespace is added to each of the host platforms when you install the Host Solution Manager. Acces permissions on this namespace are needed when running any of the API methods or supplied scripts. During installation of Host Solution Manager default access to Intel_SCS_Framework is granted to local platform administrators.
- ***Intel_RCS*** – Permissions on this namespace are needed only if you want to publish data to the RCS Database.
- ***Intel_RCS_Editor*** – Permissions on this namespace are needed only if you want to configure the solution using a profile created in the Intel® SCS Console and stored in Intel® SCS RCS Database
- ***Intel_RCS_Systems*** – Permissions on this namespace are needed only if you want to view data that was published to the RCS in Intel® SCS Console.

Intel® SCS 9.0 provides separate Remote Configuration Service Utility located in **Utils** folder of Intel® SCS 9.0 downloaded package that ease managing WMU access on Intel®RCS WMI namespaces.

To assign ***Intel_RCS*** WMI namespace access to user named for example: "***VPRODEMO\ACU***" you have to use following command on computer running Intel®RCS service:

RCSUtils.exe /Permissions Add ACU /RCSnamespace RCS

If you need to add permissions on other Intel® RCS WMI namespaces add them to the list of namespaces in RCSUtils.exe command:

RCSUtils.exe /Permissions Add ACU /RCSnamespace RCS Editor

For more details on use of Remote Configuration Service Utility please refer to User Guide located in same folder in *Intel(R)_SCS_RCSUtility.pdf* file.
RCS Utility must be "Run as administrator" on server running Intel® SCS 9.0 Remote Configuration Service.

NOTE

RCSUtils.exe can only manage access to Intel® RCS WMI namespaces (on RCS server), but not to **Intel_SCS_Framework** on host platform. For information about how to give these permissions to the necessary user accounts, go to this web page: http://technet.microsoft.com/en-us/library/cc771551.aspx

4.3.3 Windows* PowerShell permissions

Sample PS scripts provided with Intel® SCS Solutions Framework in ***Solutions_Framework\Scripts*** folder of Intel® SCS 9.0 downloaded package require to run Windows* PowerShell with administrator privileges for both Remote (on Console) or Local (on host) execution.

On host or server system Choose: ***All Programs*** > ***Accessories*** > ***Windows PowerShell*** right click on ***Windows PowerShell*** choose ***Run as administrator***.

By default, PowerShell is set to restrict the running of any PowerShell scripts. The scripts provided in the Scripts folder are not currently signed. If you do not change this setting before running a script, the script will fail.

To check current execution policy in PowerShell prompt type **get-executionpolicy** and press <Enter>.

To run them remotely you will need to either sign them or set the execution policy to "Unrestricted".

To change Execution policy in PowerShell prompt type **set-executionpolicy Unrestricted**, press <Enter> and confirm it by pressing <Y> key.

4.3.4 Windows* Firewall settings

In order to allow WMI communication from management server to each of host platforms while running provided PS scripts (or WMI commands) on server (with –Computername switch) WMI communication has to be open on each of host platforms firewall.

Windows* PowerShell script returning: "Get-WmiObject : Could not get objects from namespace Root\Intel_SCS_Framework. The RPC server is unavailable" error, accompanied by one of two other errors: "Failed to access the Framework agent" or "Failed to load component" can be caused by incorrect Windows* Firewall settings that is blocking WMI access to Framework Agent on host platform.

NOTE

Above errors may also be caused by target host system being disconnected from network, unreachable or its OS not running (in S3/S4 or S5 power state). Having Intel® Active Management Technology configured on target system HW will help to determine platform power state and allows turning on/waking up target system.

To enable WMI communication through Windows* Firewall open Control Panel then Windows Firewall and choose "***Allow a program or feature through Windows Firewall***"

Figure 6: Windows* Firewall

Locate ***Windows Management Instrumentation (WMI)*** feature and select checkbox for appropriate network for which WMI is to be allowed (in most cases it will be "***Domain***") then press OK.

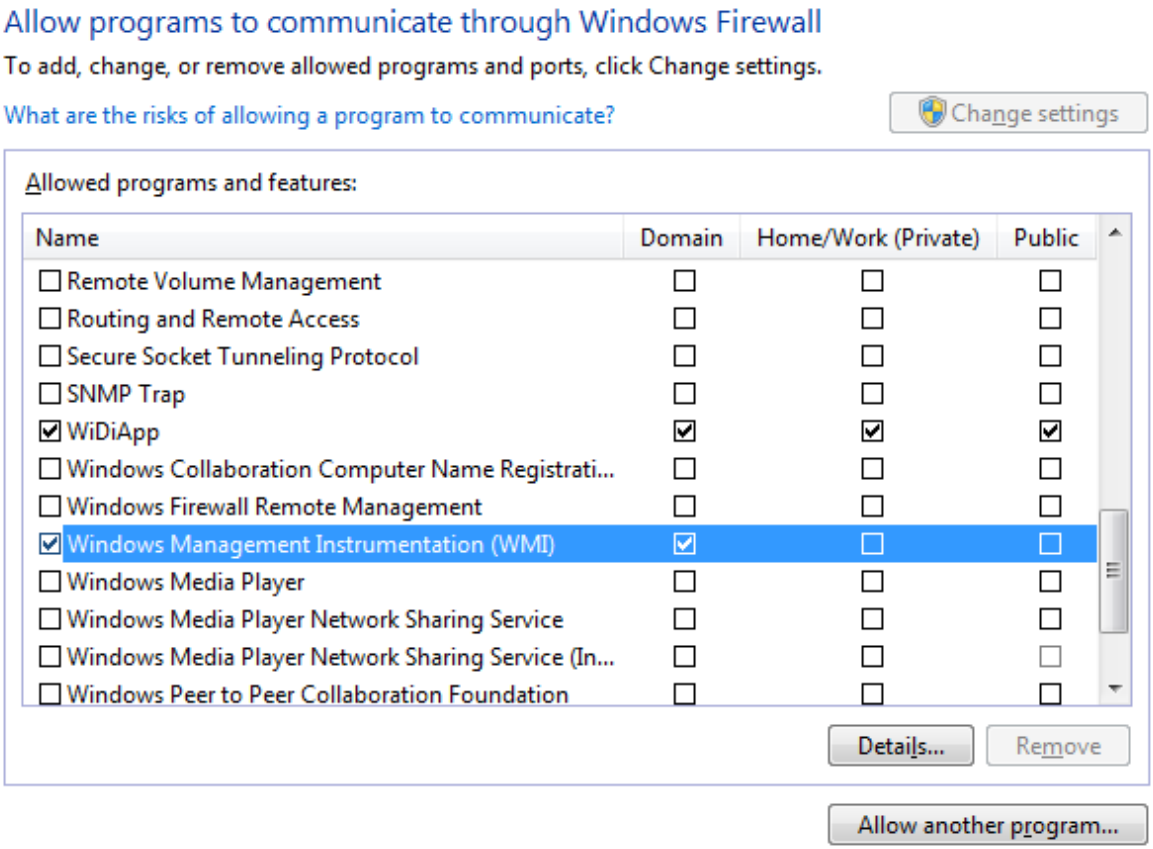

Figure 7: WMI allowed through Windows* Firewall

4.4 Installation of Solutions Framework

Intel® SCS 9.0 Solutions Framework components have to be installed in order to discover platform solutions and manage them.

For details about Installation of Intel® SCS 9.0 Solutions Framework please refer to Intel® Solutions Framework documentation, ***Intel(R)_Solutions_Framework.pdf*** file is located in ***Solutions_Framework*** folder of Intel® SCS 9.0 downloaded package.

Following sections will just provide summary of installation steps.

4.4.1 Host Solution Manager Installation

Installation of Host Solution Manager is required on each of target host PC platforms for platform and solutions discovery and solutions configuration and maintenance tasks.

Host Solution Manager installer file (***HostSolutionManagerInstaller.msi***) is located in ***Solutions_Framework\Framework*** folder of Intel® SCS 9.0 downloaded package.

The installer supports "silent installation" by running following command:
HostSolutionManagerInstaller.msi /qn

HostSolutionManager-silent-install.bat sample silent installation file is provided in same folder for deploying the installer using your software deployment console.

4.4.2 Solution Host Plugin Installation

Installation of each of Host Solution plugins is required on each of target host PC platforms for solutions discovery, configuration and maintenance tasks.

Intel® SCS 9.0 release supports only host plugin for Intel® SSD Pro Series that is located in the ***Solutions_Framework\SSDSolution\SSDHostDLL*** folder of Intel® SCS 9.0 downloaded package.

NOTE

If Host Solution Manager is installed but Host Solution Plugin is **not** installed on host platform attempts to discover or manage solution via PS script will return following error: "Failed to load component"

The Host Solution Manager searches for host solution plugins by looking in the registry.

Intel® SSD Pro Series host plugin installer file (***SSDProInstaller.msi***) installs the DLL (and any additional files it requires) and automatically creates a registry key for the DLL.

All necessary files are installed in "*\Program Files (x86)\Intel\SCS\Solution Framework\Solutions\Intel® SSD Pro Series Plug-in*" folder by default.

The installer supports "silent installation" by running following command: **SSDProInstaller.msi /qn**

Restart host OS after installation of host plugin for Intel® SSD Pro Series is **mandatory**.

HostSolutionManager-silent-install.bat sample silent installation file provided for installation of Host Solution Manager may be appropriately modified to support silent installation of *SSDProInstaller.msi* as well for deploying the *SSDProInstaller.msi* installer using your software deployment console.

NOTE

Alternatively if you are not using an installation file, you must manually copy all necessary files (ssdpro.dll and appropriate one of Server2003, XP or Vista folders) to selected folder on host platform and add a registry key for the plugin at its location on the host platform.

For details please refer to ***Intel(R)_Solutions_Framework.pdf***

4.4.3 Solution Profile Editor Plugin Installation

Installation of each of Solution Profile Editor plugins is required on each computer running Intel® SCS 9.0 Console.

Intel® SCS 9.0 release supports only Solution Profile Editor plugin for Intel® SSD Pro Series that is located in the ***Solutions_Framework\SSDSolution\SSDProfileEditor*** folder of Intel® SCS 9.0 downloaded package.

To install Solution Profile Editor plugin for Intel® SSD Pro Series copy ***SSDProfileEditor*** folder to SCS Console Plugins folder on each computer running Intel® SCS 9.0 Console.

The default installation folder is:

- for 32-bit OS ***C:\Program Files\Intel\SCS9\Console\Plugins***
- for 64-bit OS ***C:\Program Files (x86)\Intel\SCS9\Console\Plugins***

Then close Intel® SCS 9.0 Console and open it again.

NOTE

Solution Profile Editor plugin for Intel® SSD Pro Series is required **only** for creation of Intel® SSD Pro Series profiles in Intel® SCS 9.0 Console and then configuring Intel® SSD Pro Series solution using such profile stored in Intel® SCS 9.0 RCS database.

5 Using Intel® SCS Solutions Framework to Discover and maintain platform solutions

Intel® SCS 9.0 Solutions Framework provides set of sample Windows* PowerShell scripts that allow to call Host Solution Manager API over WMI.

Scripts are located in the ***Solutions_Framework\Scripts*** folder of Intel® SCS 9.0 downloaded package.

You will have to copy desired scripts into folder of your choice on Management Console (server) or target host PC platform – depending where you want to run them (Remotely or Locally).

Please remember to run Windows* PowerShell with administrator privileges (Run as administrator) and to configure Windows* PowerShell execution policy, WMI permissions and WMI pass through on Windows Firewall- see section 4.3.

Scripts can be run on:

- **Remotely** on Management Console (server) to perform remote tasks on host system by using **–***ComputerName* parameter, e.g.:
  .\SCS-PlatformDiscovery -computername U772vPro.vprodemo.com
  where:
  .\SCS-PlatformDiscovery **-** is particular PS script (here discovery of supported solutions)
  U772vPro.vprodemo.com – is target host platform FQDN. This PC name will be used in following examples.

  or
- **Locally** on host platform. **Optionally** some scripts executed locally can be used with **–Publish** parameter to report Discovered Platform or Solution data back to Intel® SCS 9.0 RCS database instead of outputting to console or file, e.g.:
  .\SCS-SolutionDiscovery -Publish infrastructure.vprodemo.com
  where:
  .\SCS-SolutionDiscovery - is particular PS script (here discovery of Intel® SSD Pro Series Solution)
  infrastructure.vprodemo.com – is FQDN of server running Intel® SCS 9.0 RCS. This server name will be used in following examples.

Output of PS script (both if executed remotely or locally) will be XML document so it can be piped to a specified .xml file by using ".> <drive:\XML_File_Name.xml>" or " > <drive:\$env:computername'_Solution'.xml> e.g.:

Executed Locally
.\SCS-SolutionDiscovery > s:\$env:computername'_Solution'.xml

Executed remotely
.\SCS-PlatformDiscovery -computername U772vPro.vprodemo.com > C:\Intel_Platform\U772vPro _Platform.xml

NOTE

There is known issue in Intel® SCS 9.0 Release: "DE2278 - The -Publish option in the Intel Solutions Framework scripts fails with an "access is denied" error when running scripts remotely." (on Console (server)).

The –Publish option is supported only if executing scripts locally on target host platform (e.g. using your software deployment console).

5.1 Platform Discovery

To discover supported Intel® platform technologies in PS console change directory to folder where you placed sample scripts and type:

Remotely (on Console):

.\SCS-PlatformDiscovery -computerName U772vPro.vprodemo.com

or

Locally on host platform:

.\SCS-PlatformDiscovery

Result XML document will be outputted to PS console:

Figure 8: Platform Discovery PS script

If you want to get result to .XML file use (e.g. Remotely):

.\SCS-PlatformDiscovery -computername U772vPro.vprodemo.com > C:\Intel_Platform\U772vPro _Platform.xml

Where:

C:\Intel_Platform\U772vPro _Platform.xml – is existing folder (!) and your desired .xml file name of where Platform Discovery shall be stored.

If script is executed correctly nothing will be outputted to PS console.

Example of U772vpro_Platform.xml file content

```
<PlatformDiscovery version="9.0.23.10">
  <Framework available="true" version="9.0.0"/>
  <Solution uuid="a543b148-407c-419d-ab91-6a26af664828" name="Intel(R) Smart Connect
  Technology" exist="false"/>
  <Solution uuid="a5e80b51-5429-4904-b412-589470884e97" name="Intel(R) AMT" exist="true"
  managed="false" state="unconfigured">
    <Hardware version="8.1.40.1416"/>
    <Software required="true" version="9.0.0.1287"/>
    <FrameworkPlugin required="false" available="false"/>
  </Solution>
  <Solution uuid="0b93a9cb-64b1-43ed-bc33-e5b0b8692694" name="Intel(R) SSD Pro Series"
  exist="true" managed="true" state="ready">
    <Hardware version="LSQi"/>
    <Software required="false"/>
    <FrameworkPlugin required="true" available="true" version="1.0.1.400"/>
  </Solution>
  <Solution uuid="8f14b6c3-9981-4347-8f05-08582591f486" name="Intel(R) Anti-Theft
  Technology" exist="true" managed="false" state="not-enrolled">
    <Hardware version="4"/>
    <Software required="false"/>
    <FrameworkPlugin required="false" available="false"/>
  </Solution>
</PlatformDiscovery>
```

Figure 9: Platform Discovery PS script –Example of Discovered Solutions

5.2 Reporting Platform Discovery to Intel® RCS database

To report discovered supported Intel® platform technologies to Intel® SCS 9.0 RCS database **on host platform only (!)** in PS console change directory to folder where you placed sample scripts and type:

.\SCS-PlatformDiscovery –Publish infrastructure.vprodemo.com

Result XML document will be outputted to PS console and entry in RCS database will be created for host computer that does not **even** support Intel® AMT technology or with Intel® AMT technology in unconfigured state (factory default state of Intel® AMT technology).
This host system entry will be visible in Intel® SCS Console with exactly same data and parameters as described for Platform Discovery Utility in Section 3.2.

Then Intel® AMT Configurator Utility can be executed locally on host platform to discovery and report Intel® AMT technology state to RCS DB in exactly same way as described in Section 3.2.

5.3 Solution Discovery

To discover solution parameters currently supported by Intel® SCS 9.0 Host Solution Plugin on Intel® platform technologies in PS console change directory to folder where you placed sample scripts and type:

Remotely (on Console):

.\SCS-SolutionDiscovery -computerName U772vPro.vprodemo.com

or
Locally on host platform:

.\SCS-SolutionDiscovery

Result XML document will be outputted to PS console:

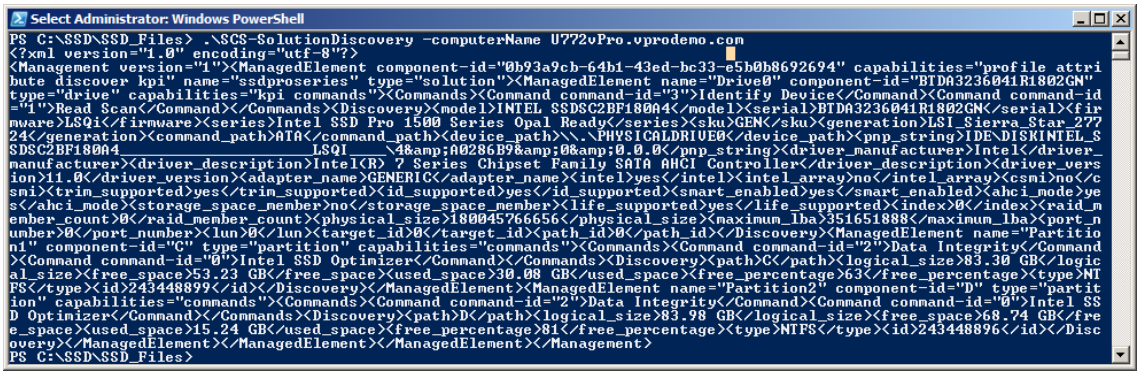

Figure 10: Solution Discovery PS script

If you want to get result to .XML file use (e.g. Remotely):

.\SCS-SolutionDiscovery -computername U772vPro.vprodemo.com > C:\Intel_Platform\U772vPro _Solution.xml

Where:

C:\Intel_Platform\U772vPro _Solution.xml – is existing folder (!) and your desired .xml file name of where Platform Discovery shall be stored.

If script is executed correctly nothing will be outputted to PS console.

5.4 Reporting Solution Discovery to Intel® RCS database

To report discovered supported Intel® Solution to Intel® SCS 9.0 RCS database **on host platform only (!)** in PS console change directory to folder where you placed sample scripts and type:

.\SCS-SolutionDiscovery –Publish infrastructure.vprodemo.com

If script is executed correctly nothing will be outputted to PS console but entry in RCS database will be created for host computer that does not **even** support Intel® AMT technology or with Intel® AMT technology in unconfigured state (factory default state of Intel® AMT technology).
This host system entry will be visible in Intel® SCS Console.

If Intel® AMT is in unconfigured state:

- the system will appear as "Unmanaged".
- Out-of-Band Intel® AMT discovery data will be not available and Intel® AMT SKU (manageability feature set) may be incorrectly assumed to be Intel® Standard Manageability only!

Selecting **Discovery Data** will show information for Discovered Intel® SSD Pro Series Solution in following sections:

- Intel® SSD Pro Series Drive itself, then

- Each of Intel® SSD Pro Series partitions (two were created on sample system).

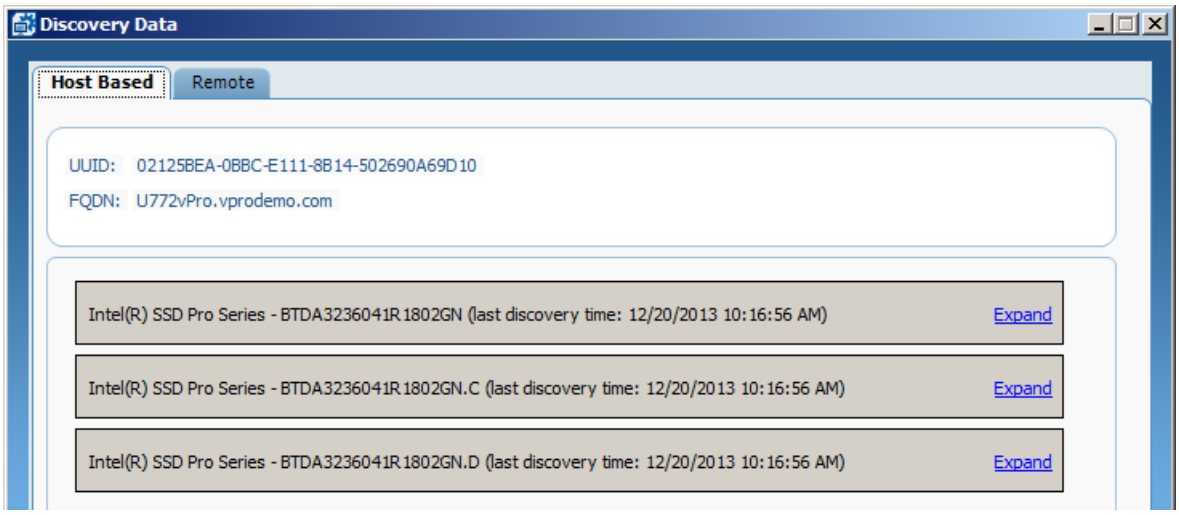

Figure 11: Solution Discovery data in RCS Database in Intel® SCS Console

You may expand each section to see more information.

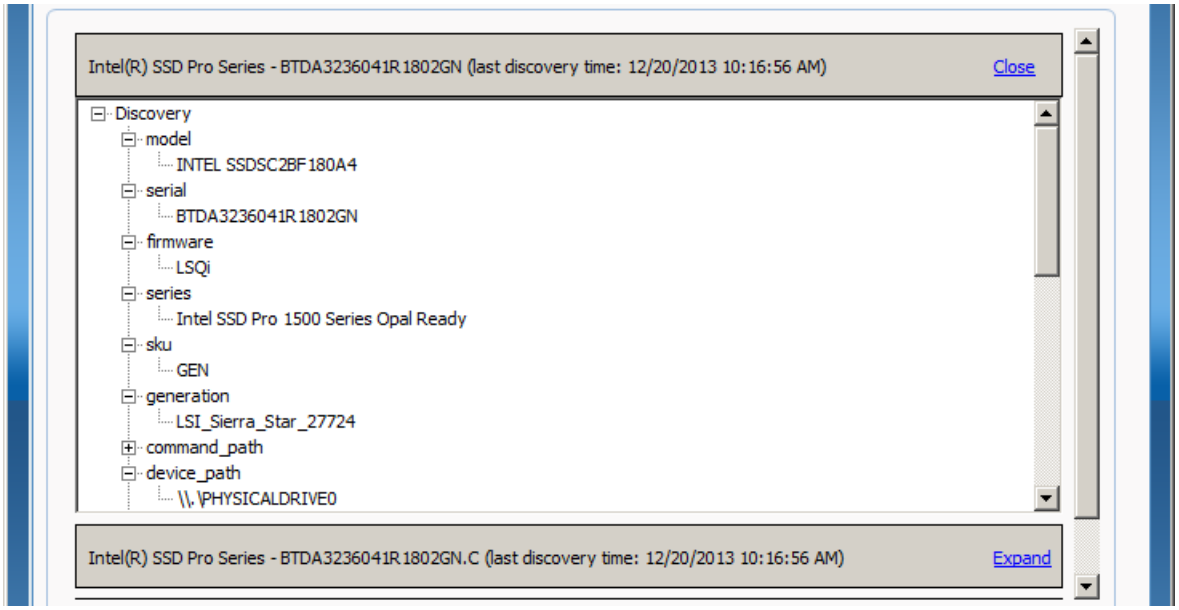

Figure 12: Intel® SSD Pro Series Drive information

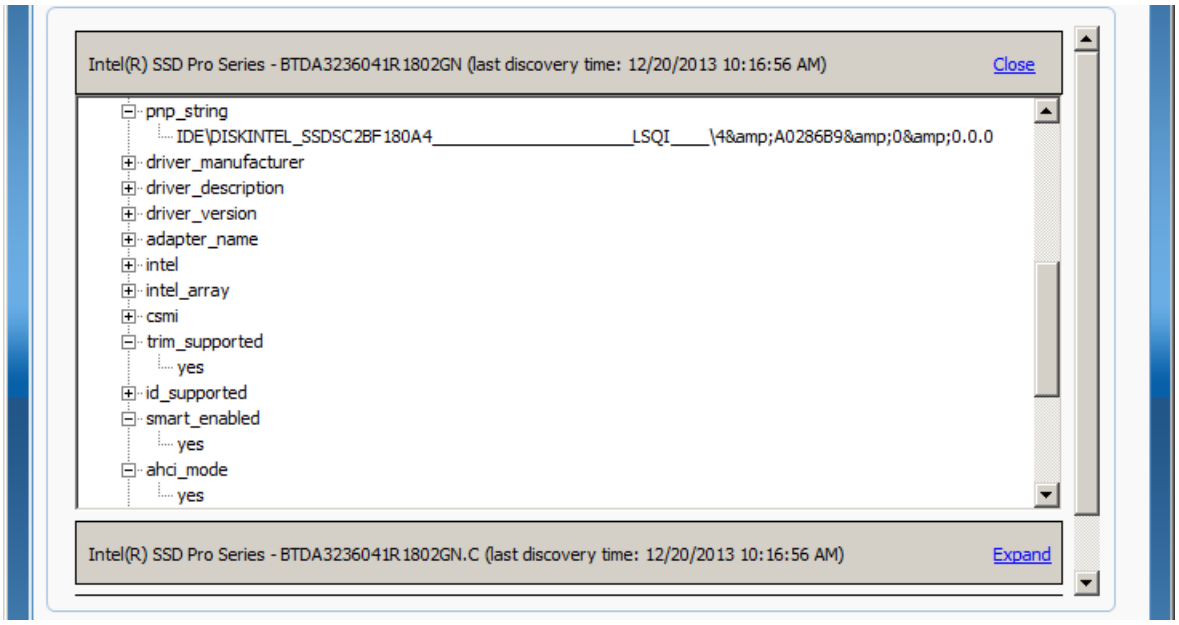

Figure 13: Intel® SSD Pro Series Drive information- contd.

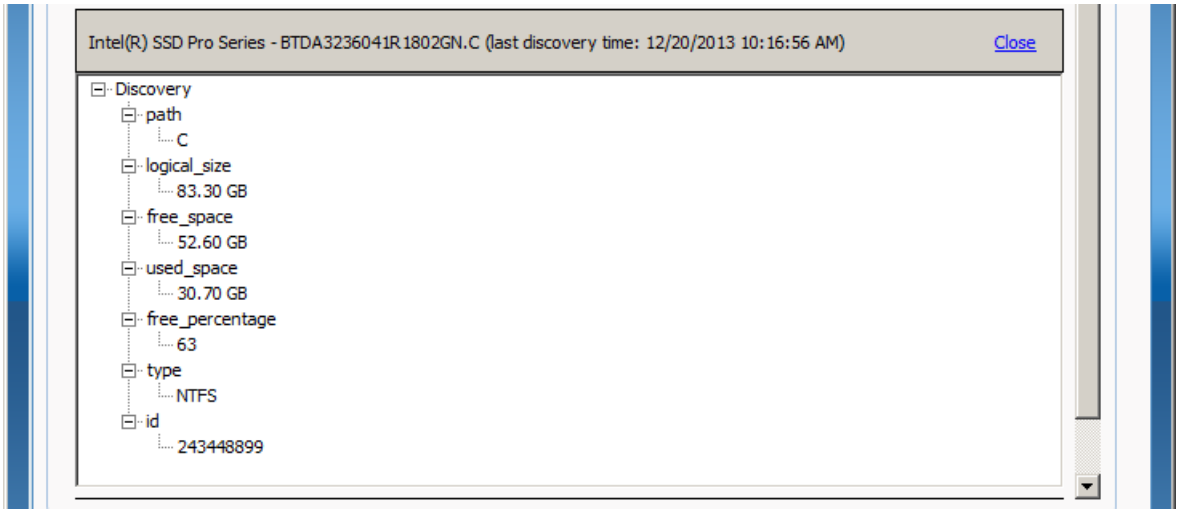

Figure 14: Intel® SSD Pro Series Drive Partition C information

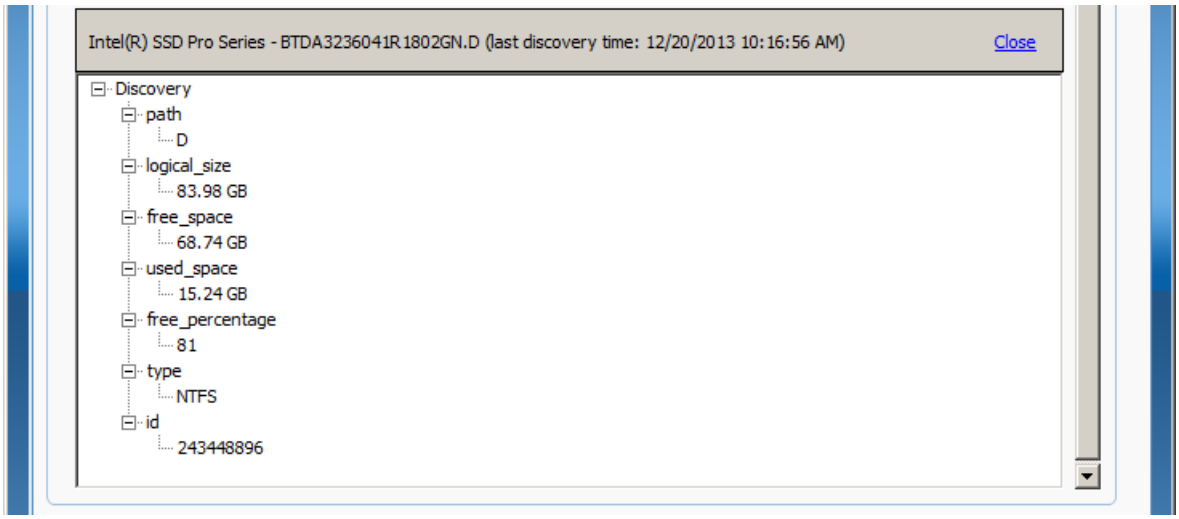

Figure 15: Intel® SSD Pro Series Drive Partition D information

5.5 Configuring Intel® SSD Pro Series Drive Solution

Intel® SSD Pro Series Drive requires tuning (configuration) of two Storage Device parameters in order to achieve optimal performance:

The Intel SSD Pro Series Plugin supports these tuning options:

• **Superfetch* / Prefetch*** - In Windows Vista and Windows 7, Superfetch tracks and copies your most frequently used applications to system memory to reduce load times. Superfetch is based on the similar Prefetch feature available in Windows XP. Superfetch/Prefetch is not needed on an Intel SSD under Windows 7 or Windows Vista, and should be disabled for optimal performance. In Microsoft Windows 8, Superfetch functions differently than in previous versions of Windows, and should not be disabled for an Intel SSD. When you select to tune this option, the Intel SSD Pro Series Plugin will check the operating system version and automatically make changes to the current setting if necessary.

• **Device Initiated Power Management (DIPM)** - For Intel SSDs installed in mobile systems, DIPM is the most efficient power management method for managing SATA link power. With DIPM, link management is handled by the SSD. (The SSD knows best how long a specific command might take to complete and is best equipped to request a link power management state change while processing the command.) DIPM should be enabled on Intel SSDs for optimal performance. When you select to tune this option, DIPM is enabled on the SSD.

There is host utility Intel® Solid-State Drive Toolbox with local OS UI that allows to see Intel® SSD drive parameters (drive info, SMART report) and tune its performance. Intel® Solid-State Drive Toolbox uses local interactive user interface so it is not a scalable solution for IT departmens – we will use it only to verify locally Intel® SSD Pro Drive configuration changes performed using Intel® SCS 9.0 Solutions Framework.

For test purposes please install latest version of Intel® Solid-State Drive Toolbox on test host platform.

Launch Intel® Solid-State Drive Toolbox. On not tuned system it will show that Superfetch* / Prefetch* feature settings are not optimized for best performance.

Device Initiated Power Management (DIPM) may also not be tuned for best power efficiency and battery life.

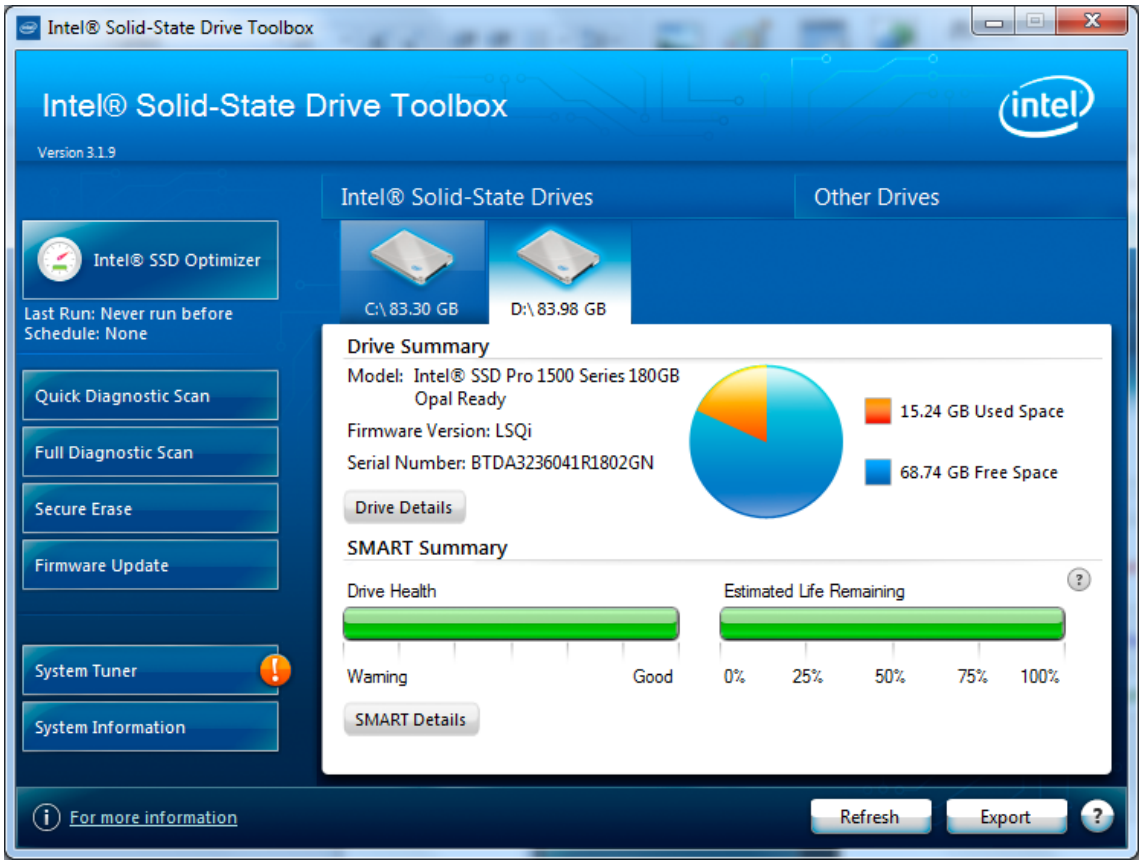

Figure 16: Intel® Solid-State Drive Toolbox –Platform to be tuned

Please select ***System Tuner*** to see details of Intel® SSD Pro Drive settings.

As you see Superfetch* / Prefetch* feature settings are not optimized DIPM feature setting is optimized.

Do not tune settings manually!

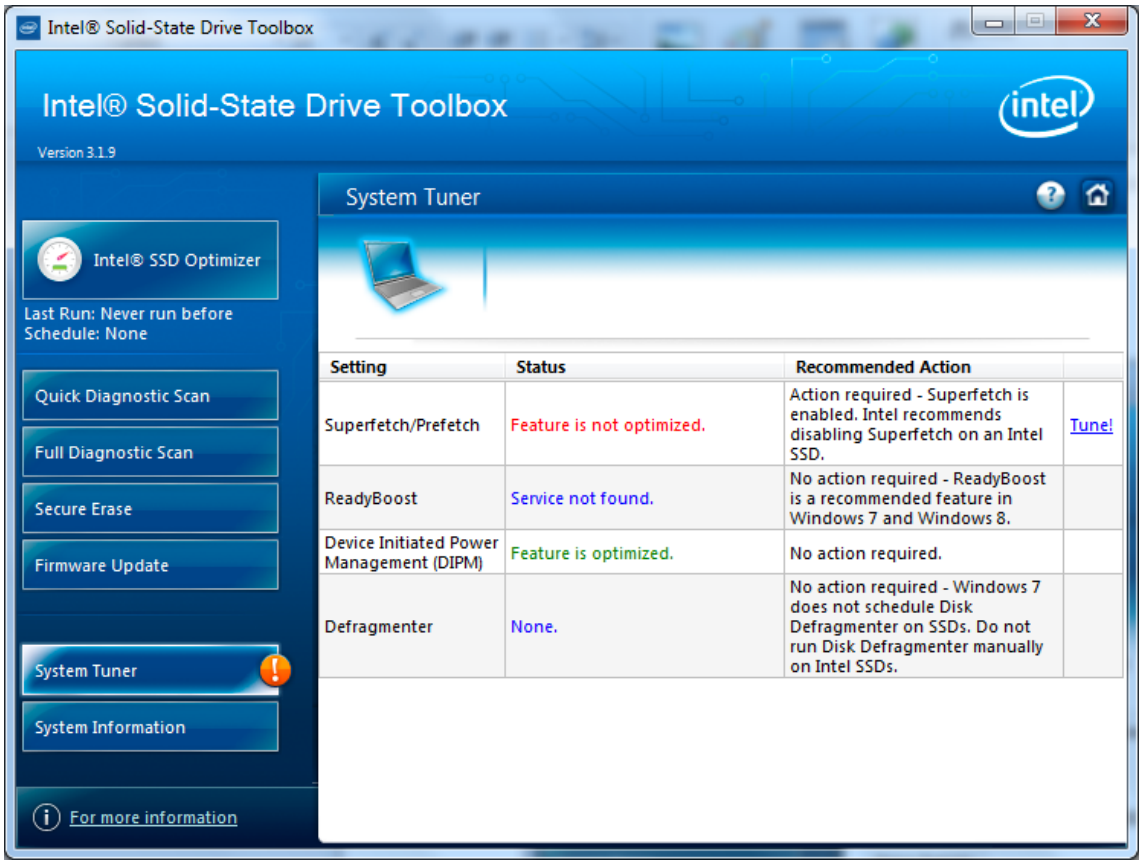

Figure 17: Intel® Solid-State Drive Toolbox –System Tuner - Superfetch* / Prefetch* not optimized.

There are three possible methods to tune Intel® SSD Pro Drive settings:

- With local XML Intel® SSD Pro settings profile
- With remote Intel® SSD Pro profile defined in Intel® SCS Console and stored in Intel® RCS Data Base.
- Setting each particular Intel® SSD Pro attribute.

5.5.1 Tuning Intel® SSD Pro Drive with local XML profile

To tune Intel® SSD Pro Drive Superfetch* / Prefetch* and DIPM feature settings with local XML profile in PS console change directory to folder where you placed sample scripts and type:

Remotely (on Console):

.\SCS-Configure -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694 -ProfileXML "<Management><ManagedElement><Profile><dipm>tuned</dipm><superfetch>tuned</superfetch></Profile></ManagedElement></Management>"

or Locally on host platform:

.\SCS-Configure -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694 -ProfileXML "<Management><ManagedElement><Profile><dipm>tuned</dipm><sup

erfetch>tuned</superfetch></Profile></ManagedElement></Management>"

If script is executed correctly nothing will be outputted to PS console but you may check result with Intel® Solid-State Drive Toolbox –select "***Home***" icon in right top corner and then ***Refresh*** button.

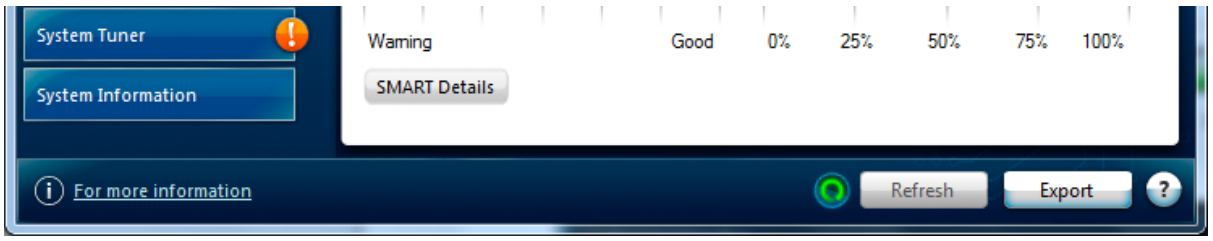

Figure 18: Intel® Solid-State Drive Toolbox –Refreshing System Tuner information

As soon as refresh is done you will see that system is tuned (exclamation mark in orange circle will disappear).

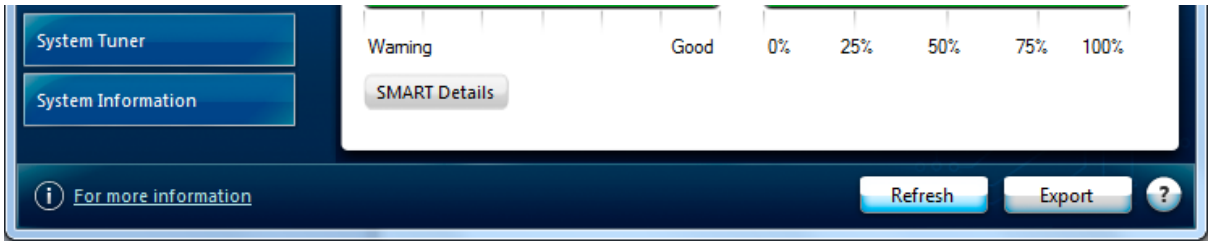

Figure 19: Intel® Solid-State Drive Toolbox – System Tuned

Then select ***System Tuner*** again and you will see that Superfetch* / Prefetch* and DIPM feature settings have been optimized.

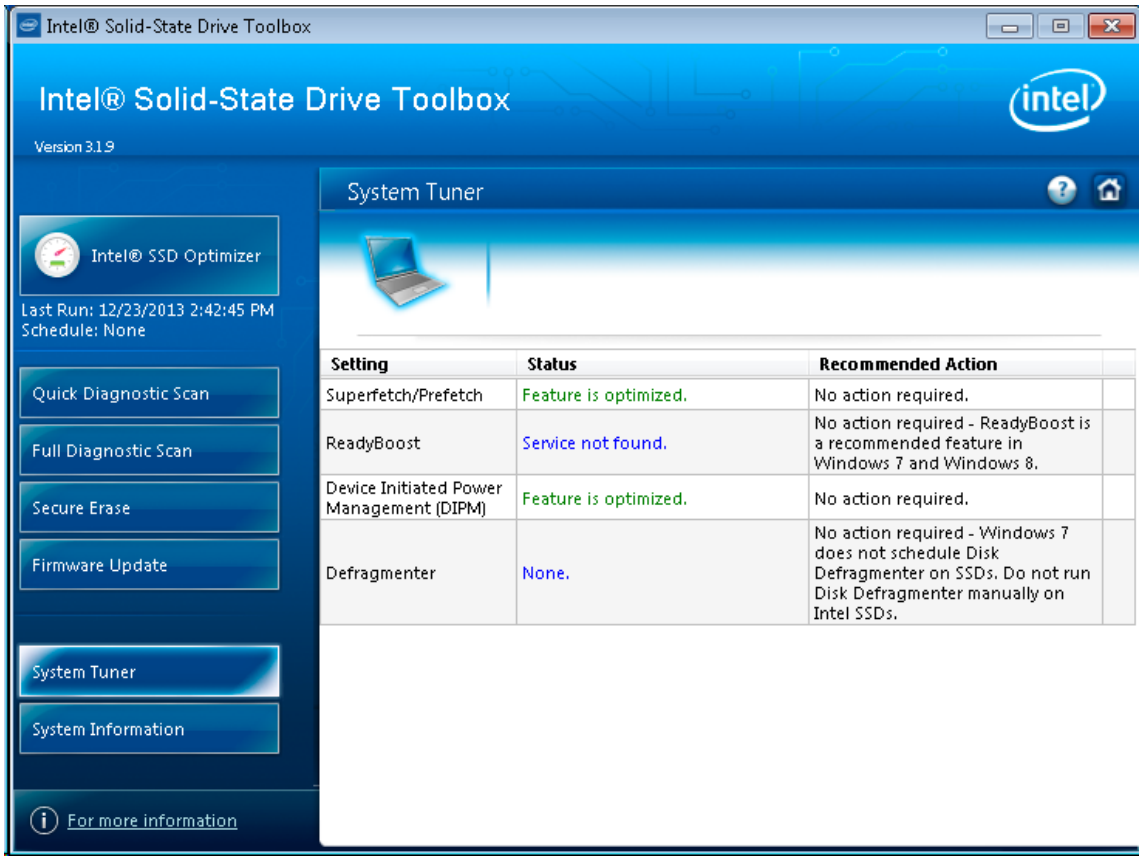

Figure 20: Intel® Solid-State Drive Toolbox –System Tuner - Superfetch* / Prefetch* Optimized

5.5.2 Tuning Intel® SSD Pro Drive with profile defined in Intel® SCS Console

To tune Intel® SSD Pro Drive Superfetch* / Prefetch* and DIPM feature settings with profile defined in Intel® SCS Console and stored in Intel® RCS Data Base.

- In Intel® SCS Console define new "Optimized" Intel® SSD Pro profile see Appendix B for details.
- Then in PS console change directory to folder where you placed sample scripts and type:

  Remotely (on Console):

  .\SCS-Configure -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694

  -RCS infrastructure.vprodemo.com -ProfileName "Optimize"

  or Locally on host platform:

  .\SCS-Configure -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694

  -RCS infrastructure.vprodemo.com -ProfileName "Optimize"

  If script is executed correctly nothing will be outputted to PS console but you may check result with Intel® Solid-State Drive Toolbox.

NOTE

To untune Intel® SSD Pro Drive Superfetch* / Prefetch* and DIPM feature settings (for test purposes) you may create second Intel® SCS Intel® SSD Pro series profile named e.g. "Unconfigure" with both checkboxes unmarked, and then deploy it using same script providing its name (e.g. Unconfigure) instead of "Optimize".

5.5.3 Tuning Intel® SSD Pro Drive by setting Intel® SSD Pro attributes

To tune Intel® SSD Pro Drive Superfetch* / Prefetch* and DIPM feature settings you may also set particular Intel® SSD Pro attribute.

In PS console change directory to folder where you placed sample scripts and type:

Remotely (on Console):

.\SCS-setAttribute.ps1 -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694 -Attribute "superfetch" -Value (116,117,110,101,100)

or Locally on host platform:

.\SCS-setAttribute.ps1 -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694 -Attribute "superfetch" -Value (116,117,110,101,100)

Where: (116,117,110,101,100) an array of unsigned chars (bytes) representing string "Tuned" setting.

If script is executed correctly nothing will be outputted to PS console but you may check result with Intel® Solid-State Drive Toolbox.

5.5.4 Reading SMART data from Intel® SSD Pro Drive

Intel® SCS 9.0 Solutions Framework with Intel® SSD Pro Host Plugin may also be used to read Key Performance Indicators from Intel® SSD Pro drive.

In PS console change directory to folder where you placed sample scripts and type:

Remotely (on Console):

.\SCS-ReadKPI -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694

or Locally on host platform:

.\SCS-ReadKPI -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694

Result XML document will be outputted to PS console:

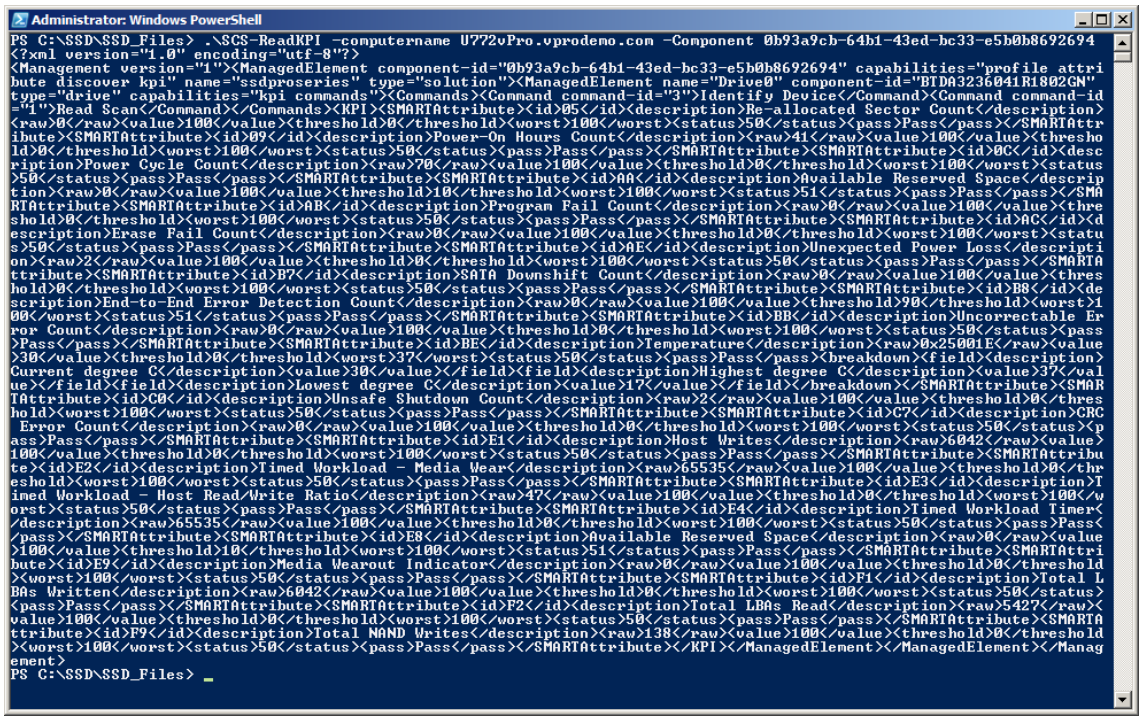

Figure 21: ReadKPI PS script

If you want to get result to .XML file use (e.g. Remotely):

.\SCS-ReadKPI -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694 > C:\Intel_Platform\U772vPro_SMART.xml

If script is executed correctly nothing will be outputted to PS console.

5.5.5 Running the Intel® SSD Optimizer on Intel® SSD Pro Drive

The Intel® SSD Optimizer helps an Intel® SSD retain its out-of-box performance by removing deleted data files from NAND flash management blocks on the SSD.
When you delete a file on your system, the operating system marks the file for deletion but does not physically erase the file. Because an SSD does not know which files are deleted, the SSD continues to think all files contain valid data. This situation causes the SSD to continue managing deleted files in addition to valid data in the SSD.

The Intel® SSD Optimizer identifies which files you have deleted and communicates that information to the SSD. This notification allows the SSD to clean up internal management space, thus eliminating the need to manage the deleted files.

You can run the Intel® SSD Optimizer by typing in PS console change directory to folder where you placed sample scripts and type:

Remotely (on Console):

.\SCS-ApplyCommand -computername U772vPro.vprodemo.com -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694.BTDA3236041R1802GN.C -Command 0 -Data

(60,112,97,114,97,109,101,116,101,114,115,62,60,47,112,97,114,97,109,101,116,101,114,115,62)

:or Locally on host platform:

.\SCS-ApplyCommand -Component 0b93a9cb-64b1-43ed-bc33-e5b0b8692694.BTDA3236041R1802GN.C -Command 0 -Data (60,112,97,114,97,109,101,116,101,114,115,62,60,47,112,97,114,97,109,101,116,101,114,115,62)

Where:

BTDA3236041R1802GN.C – is Intel® SSD Pro drive identifier (serial number) followed with partition (C) where Intel® SSD Optimizer is to be performed.

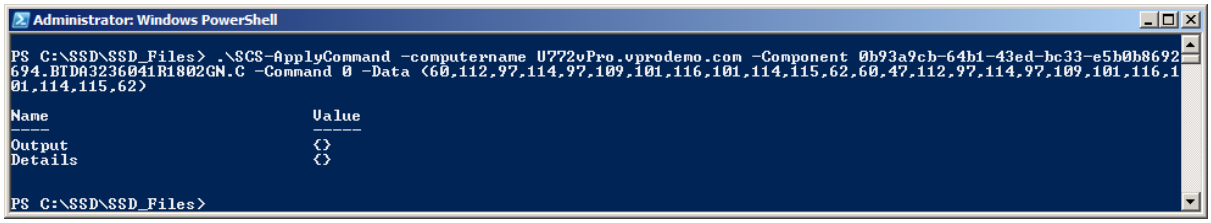

Figure 22: Intel® SSD Optimizer run by ApplyCommand script

You may notice that drive LED indicator on host platform will be active for about minute or more (depending of capacity of the drive)

A Appendix – Discovering Intel® platform technologies with Intel® SCS Platform Discovery Utility

1 Listing discoverable solutions

Use **PlatformDiscovery.exe -List** command to list currently discoverable Intel® platform technologies and solutions with their assigned Globally Unique Identifiers (GUID) instead of performing actual discovery.

Command will return text list of currently discoverable solutions:

```
X:\IntelSCS_9.0.23.10\Solutions_Framework\PlatformDiscovery> PlatformDiscovery.exe -List

"a543b148-407c-419d-ab91-6a26af664828","Intel(R) Smart Connect Technology"
"a5e80b51-5429-4904-b412-589470884e97","Intel(R) AMT"
"0b93a9cb-64b1-43ed-bc33-e5b0b8692694","Intel(R) SSD Pro Series"
"8f14b6c3-9981-4347-8f05-08582591f486","Intel(R) Anti-Theft Technology"
```

Figure 23: Platform Discovery Utility – List of discoverable solutions

2 Discovering solutions on actual host platform

Use ***PlatformDiscovery.exe*** *command* to discover Intel® platform technologies on current host PC.

Output of this command is an XML document describing the platform capabilities, so it can be piped to a specified xml file by using
PlatformDiscovery.exe > PlatformSolutions.xml *command or*
PlatformDiscovery.exe > %computername%_PlatformSolutions.xml *command*

Examples of discovery data (sample content of .xml file):

Example 1 – *Platform with* Intel® Smart Connect Technology in "enabled state"; Intel® AMT in "configured" state, AMT FW version 8.1.51.1471, Intel® ME SW Package (MEI Driver, LMS service) version 9.5.10.1658

```
<PlatformDiscovery version="9.0.23.10">
<Framework available="true" version="9.0.0"/>
<Solution uuid="a543b148-407c-419d-ab91-6a26af664828" name="Intel(R) Smart Connect Technology"
exist="true"managed="true" state="enabled">
<Hardware/>
<Software required="true" version="4.1.41.2234"/>
<FrameworkPlugin required="false" available="false"/>
</Solution>
<Solution uuid="a5e80b51-5429-4904-b412-589470884e97" name="Intel(R) AMT" exist="true" managed="true"
state="configured">
<Hardware version="8.1.51.1471"/>
<Software required="true" version="9.5.10.1658"/>
<FrameworkPlugin required="false" available="false"/>
</Solution>
<Solution uuid="0b93a9cb-64b1-43ed-bc33-e5b0b8692694" name="Intel(R) SSD Pro Series" exist="false"/>
<Solution uuid="8f14b6c3-9981-4347-8f05-08582591f486" name="Intel(R) Anti-Theft Technology" exist="false"/>
</PlatformDiscovery>
```

Figure 24: Platform Discovery Utility –Discovered Solutions –Example 1

Example 2 *– Platform with Intel® AMT in "unconfigured" state, AMT FW version 8.1.40.1416, Intel® ME SW Package (MEI Driver, LMS service) version 9.0.0.1287; Intel® SSD Pro Series drive FW version LSQi and Intel® Anti-Theft Technology in "not enrolled" state*

```
<PlatformDiscovery version="9.0.23.10">
<Framework available="true" version="9.0.0"/>
<Solution uuid="a543b148-407c-419d-ab91-6a26af664828" name="Intel(R) Smart Connect Technology"
exist="false"/>
<Solution uuid="a5e80b51-5429-4904-b412-589470884e97" name="Intel(R) AMT" exist="true"
managed="false"state="unconfigured">
<Hardware version="8.1.40.1416"/>
<Software required="true" version="9.0.0.1287"/>
<FrameworkPlugin required="false" available="false"/>
</Solution>
<Solution uuid="0b93a9cb-64b1-43ed-bc33-e5b0b8692694" name="Intel(R) SSD Pro Series" exist="true"
managed="true"state="ready">
<Hardware version="LSQi"/>
<Software required="false"/>
<FrameworkPlugin required="true" available="true" version="1.0.1.400"/>
</Solution>
<Solution uuid="8f14b6c3-9981-4347-8f05-08582591f486" name="Intel(R) Anti-Theft Technology" exist="true"
managed="false"state="not-enrolled">
<Hardware version="4"/>
<Software required="false"/>
<FrameworkPlugin required="false" available="false"/>
</Solution>
</PlatformDiscovery>
```

Figure 25: Platform Discovery Utility –Discovered Solutions –Example 2

3 Reporting Discovered solutions to Intel® RCS Database

Having Intel® SCS 9.0 Remote Configuration Service (RCS) installed in Database Mode on management server allows it to receive Platform and Solution discovery data from Platform Discovery Utility executed on host PC using Windows Management Instrumentation (WMI).

Use ***PlatformDiscovery.exe -ReportToRCS <RCS address>*** *command to* discover Intel® platform technologies on current host PC and report it to Intel® SCS 9.0 RCS database instead of outputting to console or file.

This command will create entry in RCS database **even** for host computer that does not support Intel® AMT technology or with Intel® AMT technology in unconfigured state (factory default state of Intel® AMT technology).

B Appendix – Creation of Intel® SSD Pro Drive profile in Intel® SCS Console

Open Intel® SCS Console
Select ***Profiles*** tab and green + button to create new profile.

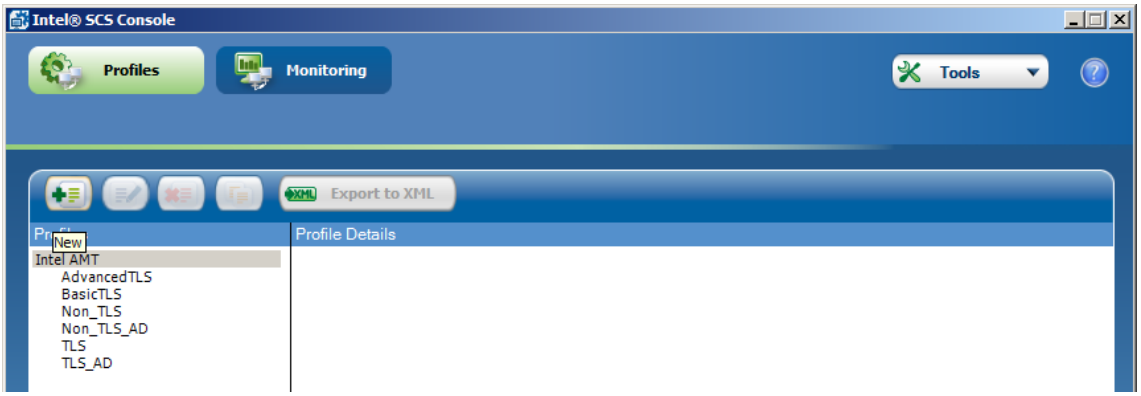

Figure 26: Intel® SCS Console – Profiles tab.

Select ***Intel SSD Pro Series*** in Profile Type field.
If you can only see Intel AMT you need to install Solution Profile Editor plugin for Intel® SSD Pro Series –see section 4.4.3 for details.

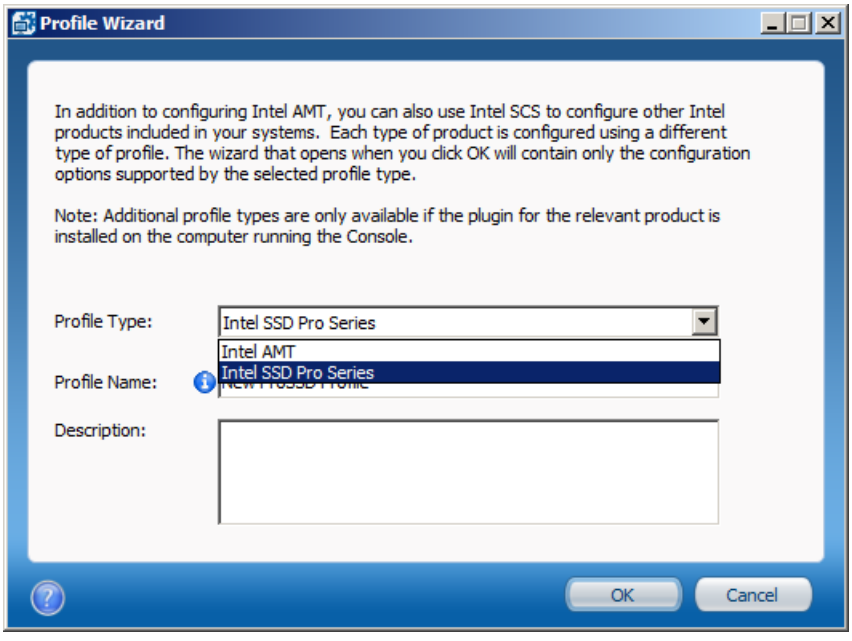

Figure 27: Intel® SCS Console -New Intel® SSD Pro Series profile

Enter profile name (it will be used later on with PS scripts), you may also enter description for new profile you are about to create.

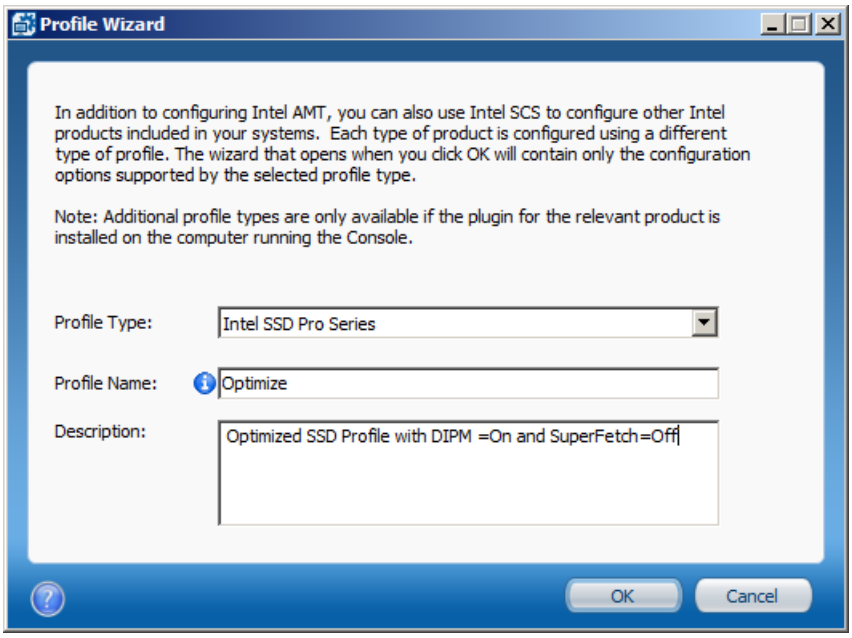

Figure 28: Intel® SCS Console -New Intel® SSD Pro Series profile name and description

Click OK, and then select desired settings for your new profile by selecting ***Tune DIPM*** and ***Tune SuperFetch*** checkboxes.

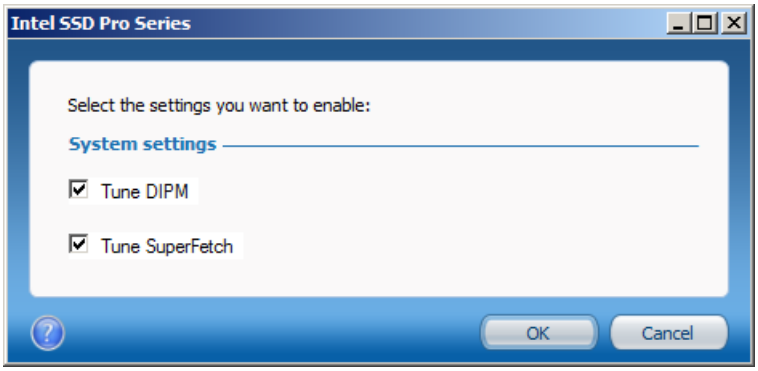

Figure 29: Intel® SCS Console -New Intel® SSD Pro Series profile settings

Click OK to save your newly defined Intel® SSD Pro Series profile in Intel® RCS database.

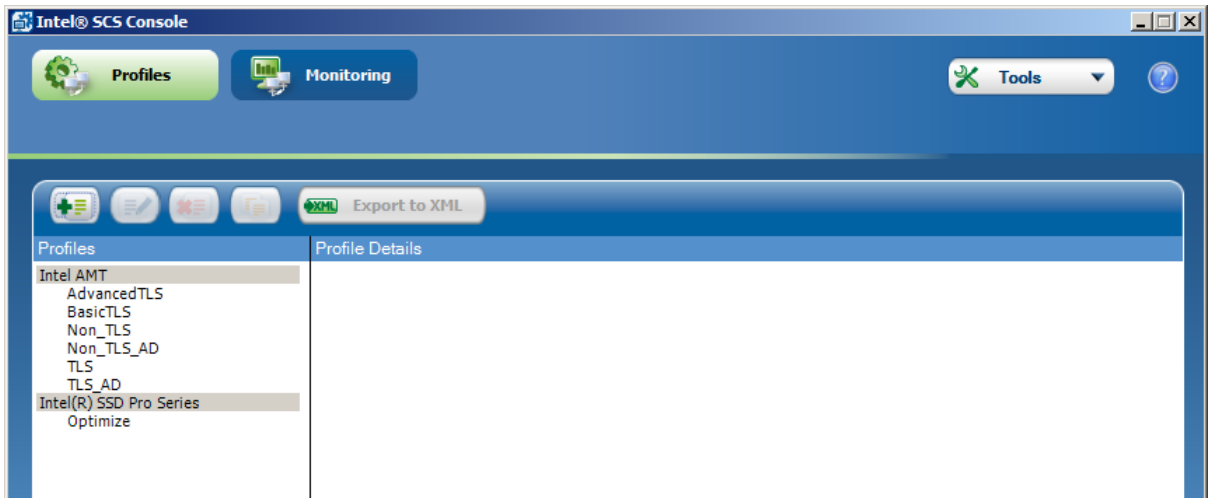

Figure 30: Intel® SCS Console -New Intel® SSD Pro Series profile in Database.