Dell Precision Optimizer

Administrator's Guide

August 2020
Rev. A02

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Contents

1

Introduction

This document describes the tools, tips, and recommendations for the IT administrators to manage Dell Precision Optimizer remotely.

Dell Precision Optimizer components

The four main components of Dell Precision Optimizer are:

- Performance
- Track and Analyze Engine (TA)
- System Maintenance (SM)
- Dell Precision Optimizer Manager CLI (dpoCmd.exe)

Each of these components are implemented as a Windows service that also acts as a COM server. The Dell Precision Optimizer installer package installs the services along with Dell Precision Optimizer support DLL(s), user interface (UI) components, kernel mode device driver(s), and so on into the POA Installation folder. Additionally, a taskbar application may be installed and launched whenever the user logs in. This application notifies the user about various POA events such as update completion and reboot required.

The Dell Precision Optimizer installer package is also responsible for creating a software registry key that is used by the Dell Precision Optimizer modules. Following are the default paths:

Table 1. Default paths

Name	Paths
Installation folder:	`C:\Program Files\Dell\PPO`
Registry Path:	`HKLM\Software\Dell\PPO`
Runtime Data:	`C:\ProgramData\Dell\PPO`

The installation package copies some default profiles and policies to the installation folder.

Topics:

- Uninstall Dell Precision Optimizer

Uninstall Dell Precision Optimizer

Dell Precision Optimizer can be uninstalled from the system using the following steps:

The uninstall command can be fetched from the registry by reading the value of the string **`UninstallString`** from the following location:

Table 2. Uninstall command location

Names	Command location
For 64bit system	`HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Windows\CurrentVersion\Uninstall\{D66A3355-FEA4-4F60-8BAF-D6CBEDB396D8}`
For 32bit system	`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\{D66A3355-FEA4-4F60-8BAF-D6CBEDB396D8}`

A sample value for **`UninstallString`** is displayed:

```
"C:\Program Files (x86)\InstallShield Installation Information\{D66A3355-FEA4-4F60-8BAF-D6CBEDB396D8}\setup.exe" -runfromtemp -l0x0007 -removeonly
```

NOTE: In this command, the value -l0x0007 may be different for the system.

From a command prompt (run as administrator), executing the above command launches the uninstall process of the Dell Precision Optimizer application. The following command can be modified to run the uninstall silently by adding the following command:

```
-s -f1<full-path-of-iss>
```

If the silent response file (.iss file) is in `C:\temp` folder and its name is **`uninst.iss`**, then following command will run uninstall silently:

```
"C:\Program Files (x86)\InstallShield Installation Information\{D66A3355-FEA4-4F60-8BAF-
D6CBEDB396D8}\setup.exe" -runfromtemp -l0x0007 –removeonly –s –f1c:\temp\uninst.iss
```

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Performance

The performance subsystem consists of the following modules:

- Policy Processing Engine (PPE)
- Profile Update Tool (profUpd.exe)

Topics:

Policy Processing Engine

Policy Processing Engine or PPE is implemented as a Windows Service which starts execution as soon as the machine boots up regardless of whether the user is logged in or not.

This module provides an interface which can be used to perform the following tasks:

- Activate or deactivate profiles
- Enumerate input and output parameters to allow new policies to be created
- Save and retrieve profiles and policies for machines, users or third-party Dell Precision Optimizer applications.

Profile update tool

This command line tool (profUpd.exe) is used by Dell Precision Optimizer UI to check and update the profiles from the Dell server. A local configuration file must be used to inform Dell Precision Optimizer the Dell server address and which protocol to use such as HTTP, HTTPS, or FTP.

NOTE: All profiles and policies on the server are digitally signed and stored encrypted using AES-256 algorithm.

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Track and Analyze

The analysis subsystem provides the ability to generate the following types of reports:

- System Analysis Reports
- Workload Analysis Reports
- CPU Intelligence Reports
- GPU Intelligence Reports
- System Diagnostic Reports
- Performance Notifications

System Analysis Reports provides the data collected by Dell Data Vault (DDV) application in an .XML format.

The **Workload Analysis** feature allows the user to analyze their workload.

Topics:

System analysis reports

The user can enable or disable these reports using the Dell Precision Optimizer COM interface. This interface allows the user to configure how often System Analysis reports are generated to enumerate and read existing reports. The System Analysis Report .XML file contains the report data which is divided into <ddv_group> and <ddv_subgroup> elements. All data related to the same category are under the same group.

All thermistor 0 related data will be under DDV_GROUP called `Thermistor 0`.

Report settings

Enable system analysis

Table 3. Enable system analysis

Attribute Detail	Description
Type:	Enable or disable check box
Default:	Disabled
Description:	This setting allows the DDV subsystem to start data collection. When disabled, DDV is not active. After enabling this option, DDV reports are generated periodically until the setting is manually turned off. Any change in this category selection should cause all existing DDV raw data to be discarded.

Generate report

Table 4. Generate report

Attribute Detail	Description
Type:	Select one of the following options: • After 24 hours (Daily) • After 12 hours • After 8 hours • After 6 hours • After 4 hours
Default:	Daily
Description:	After enabling this option, DDV collects raw data and generates reports periodically. This setting controls how often the raw data is processed by DDV and converted into a new report. Any change in this category selection should cause all existing DDV raw data to be discarded.

Enable data collection

Table 5. Enable data collection

Attribute Detail	Description
Type:	More than one category can be selected from the following: • Battery • Thermal • Fan • Processor • Memory • Storage • Network
Default:	All check boxes are enabled
Description:	This setting allows the user to control which categories of data will be displayed in the report.

Workload analysis

Dell Precision Optimizer 5.0 and later allows the user to characterize their workloads and determine their resource usages. When the user initiates the analysis, Dell Precision Optimizer collects the system resource usage parameters such as CPU, memory, disk, and GPU.

CPU intelligence reports

Dell Precision Optimizer 5.0 and later allows the user to view enhanced Intel CPU information which includes processor information as well as live data for each logical processor. This data is displayed in the form of line graphs by Dell Precision Optimizer UI.

The UI uses the COM interface to get the following processor information:

- CPU Name
- Number of Sockets
- Number of Physical Cores
- Hyper-Threading State (Enabled/Disabled)
- L1 Cache Size (KB)
- L2 Cache Size (KB)

- L3 Cache Size (KB)
- CPU Utilization per logical processor
- CPU Active Relative Frequency per logical processor (to determine Turbo Residency)
- Processor Queue Length for the system
- Number of System Threads

GPU intelligence reports

For supported Nvidia and AMD GPU adapters only, Dell Precision Optimizer 5.0 and later allows the user to view enhanced GPU. This includes GPU adapter and software information as well as live data for each GPU. This data is displayed in the form of line graphs by Dell Precision Optimizer UI.

The UI will use Dell Precision Optimizer interface to get the following GPU information:

- Number of GPUs
- GPU Driver Version
- GPU Adapter Name (Active GPU 0 Only)
- Video BIOS Version (Active GPU 0 Only)
- Framebuffer Size (Active GPU 0 Only)

The GPU live data is available from certain Nvidia and AMD adapters only, when a user is logged in.

NOTE: On some mobile systems with AMD GPU adapters, valid live data may only be displayed when an active load is running on the AMD GPU adapter.

The following live information for each GPU shall be collected and displayed in the form of line graphs.

- GPU Utilization
- GPU Temperature
- GPU Fan #0 Speed (%)
- Video Memory Utilization

System Diagnostics Report

Dell Precision Optimizer 5.0 and later allows the user to run System Diagnostics reports. These are standard Microsoft-provided reports such as a System Report, Battery Report, and Reliability Report. The user must be able to generate a new report or view the last report generated previously. Only users with local administrator privileges can use this option.

This feature acts as a shortcut to existing Microsoft tools. The following reports are available from this dashboard:

- System Diagnostics Report contains:
  - Diagnostics results listing errors and warning in the system
  - Resource usage overview
- System Reliability Report contains:
  - List of Application, Windows and Miscellaneous failures in the last few weeks
  - Informational Events and Warnings during that period
  - Windows Stability Index
- Battery Report (This feature is available only on Windows 8 and later versions):
  - Installed Battery Details
  - Recent Usage and History
  - Battery Capacity and Life Estimates

Performance Notifications

Dell Precision Optimizer 4.0 and later allows you to enable Performance Notifications. It allows you to get notifications in any of the following cases:

- Excessive CPU utilization
- Excessive memory utilization
- Excessive disk read or write operations

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System maintenance

Dell Precision Optimizer System Maintenance or SM allows you to filter updates that are seen or applied based on the following criteria derived from Dell Command | Update:

- Criticality (Critical, Recommended, and Optional)
- Type (Hardware Drivers, Application, BIOS, and Firmware)
- Category (Audio, Chipset, Input, Network or Bluetooth, Storage, Video, and Others)

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User feedback

Dell Precision Optimizer UI provides an option to the user to send feedback to Dell. Dell Precision Optimizer UI provides a link or button which the user can click to initiate this feedback. UI launches a URL in the browser which will allow the user to use a Dell standard form to provide feedback for Dell Precision Optimizer.

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Improve Dell Precision Optimizer

The Dell Precision Optimizer Customer Experience Improvement Program allows Dell customers to impact the development of future Dell Precision Optimizer releases. By sharing information with Dell regarding how you use Dell Precision Optimizer, you can contribute to improvements of future versions of the product.

The Dell Precision Optimizer Customer Experience Improvement Program adheres to all of the provisions of the Dell privacy policy. The data collected is limited to Dell Precision Optimizer usage and the workstation's Service Tag. No personal information of data is collected. You may opt in or out of the program at any time.

This feature is disabled by default.

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Enterprise tools

Topics:

WMI Providers

Dell Precision Optimizer 5.0 and later includes a Windows Management Instrumentation (WMI)provider to allow access to the following information. Please refer to Appendix A for MOF descriptions. The following two files are part of the Dell Precision Optimizer package:

- Dell Precision Optimizer WMI Provider: dpoProv.mof
- Dell Precision Optimizer SMS MOF definition file: sms_def_dpo3.mof

- DDV Reports
- Product Version
- Last Check For Update Time
- Last System Update Time
- Last Check For Profiles
- Profile or Policy Trigger History
- List of Active Profiles
- Performance Notifications

DPOCMD.EXE

Dell Precision Optimizer 5.0 and later provides CLI tool, dpoCmd.exe, that allows the IT administrator the following capabilities:

- Add a new Profile or Policy
- List all Profiles
- Enable or Disable a Profile
- Schedule System Analysis report(s) with specific filters
- Run Dell Precision Optimizer Dell System Update with filters
- Check for Dell Precision Optimizer Dell System Updates with filters
- Export a user created profile
- Import a user created profile
- Enable/Disable UI features using the following CLI options; these are also controlled using new command line switches in Dell Precision Optimizer installer:

Table 6. Command line switches

Control	Definition	Default	Command line switch
ProfileControl	If 0, then do not allow user to enable or disable profiles	1	PROFCTRL
ProfileUpdate	If 0, then do not allow user to check for new profiles	1	PROFUPD
SystemUpdate	If 0, then do not allow user to check for system updates	1	SYSUPD

Table 6. Command line switches (continued)

Control	Definition	Default	Command line switch
DDVControl	If 0, then do not allow user to enable or disable the System Analysis reports	1	DDVCTRL
UserFeedback	If 0, then do not allow user to send Dell Precision Optimizer feedback	1	USRFB
WorkloadAnalysis	If 0, then do not allow user to run Workload Analysis	1	WKLANL
GfxPlugins	If 0, then do not show GfxPlugin options to the user	1	GFXPLUGINS
ImproveDPO	If 0, then do not show user Improve Dell Precision Optimizer setting	1	IMPROVEDPO
ISVCertDrvr	If 0, then do not allow user to view/install ISV Certified graphics drivers	1	ISVCERTGFX
SmartAlerts	If 0, then do not allow user to enable or disable the Smart Alerts	1	SMARTALERT

CLI Usage:

```
dpoCmd.exe -savePolicy <complete_dpx_path>
dpoCmd.exe -saveProfile <complete_dpx_path>
dpoCmd.exe -listProfiles
dpoCmd.exe -enableProfile <profile_guid>
dpoCmd.exe -disableProfile <profile_guid>
dpoCmd.exe -scheduleReports <numReports> <reportDuration> [-r <ddvSubSystem> ] [-r
<ddvSubSystem>] ...
```

- where, **`<reportDuration>`** can be one of 0, 4, 6, 8, 12
  - 0 means daily report
  - 4 means 4 hour report
  - 6 means 6 hour report and so on.
- **`-r <ddvSubSystem>`** removes that subsystem and the data does not appear in the DDV reports that are generated. <ddvSubSystem> can be one of the following:
  - Battery
  - Thermal
  - Fan
  - Processor
  - Memory
  - Network
  - Storage

```
dpoCmd.exe -cancelReports
```

`dpoCmd.exe -enableFeatures <feature> [<feature> ...]`, where <feature> can be one of the following:

- PROFCTRL
- PROFUPD
- SYSUPD
- DDVCTRL
- USRFB
- UPGOPT
- WKLANL

- GFXPLUGINS
- IMPROVEDPO
- ISVCERTGFX
- SMARTALERT

`dpoCmd.exe -disableFeatures <feature> [<feature> ...]`, where <feature> can be one of the following:

- PROFCTRL
- PROFUPD
- SYSUPD
- DDVCTRL
- USRFB
- UPGOPT
- WKLANL
- GFXPLUGINS
- IMPROVEDPO
- ISVCERTGFX
- SMARTALERT

```
dpoCmd.exe -updateNow -criticality:CRO -filter:BDAF -device:ACMSNV <activityLogFileName>
dpoCmd.exe -checkForUpdatesNow -criticality:CRO -filter:BDAF -device:ACMSNV
<activityLogFileName>
```

where **`-criticality:`** can be one or more of the following:

- C => Critical
- R => Recommended
- O => Option

where **`-filter:`** can be one or more of the following:

- B => BIOS
- D => Drivers
- A => Applications
- F => Firmware

where **`-device:`** can be one or more of the following:

- A => Audio
- C => Chipset
- M => Mouse/Keyboard
- S => Storage
- N => Network/Bluetooth
- V => Video

Setup command line switches

Dell Precision Optimizer 5.0 installer provides command line switches to allow IT administrator to control certain behaviors of the client package. This list is mentioned in the Section 8.2.

Table 7. Setup command line switches

Command line switches	Description
Setup.exe PROFUPD=0 WKLANL=0	To install Dell Precision Optimizer, where the user is not allowed to check for new profiles or run workload analysis.

In addition, a new option GUI=0, allows the IT administrator to install the Dell Precision Optimizer client without any UI component, that is headless mode. The user cannot control the software. The IT administrator may use the new CLI tool to enable or disable other runtime features.

Using SCCM and WSI

SCCM and WSI are the methods that are used by IT administrators to centrally manage their systems and software applications.

Dell Optimizer supports SCCM and WSI for configuration and deployment. For more information about SCCM, see www.docs.microsoft.com and WSI, see www.vmware.com.

Instructions for creating the Dell Optimizer application package

Follow these steps to create a Dell Optimizer package that you can deploy on a selected client system in the Enterprise.

NOTE: The steps may differ slightly based on the SCCM version that you are using.

1. Download the Dell Optimizer files required for installation.
2. In the **Configuration Manager** console:
    - Open the **Software Library** page and click **Overview** > **Application Management**.
    - Right-click **Applications** and select **Create Application**.
3. In the **Create Application** wizard:
    - Select **Manually** and specify the application information.
    - Enter the application name as **Dell Optimizer 1.0**, and click **Next** in the **Application Catalog**.
    - Click **Add** in the **Deployment Types** page.
    - In the **Create Deployment Type** wizard, select the **Type** as **script installer** and click **Next**.
    - Enter the deployment type, and click **Next**.
    - Enter the location of the Dell Optimizer files in the content location.
    - Enter the **Installation Program** as `“DellOptimizer.exe” /s`.
    - In the **Detection Methods** tab, click **Add** clause.
    - The detection rule is as follows:

```
Setting Type: Registry
 Hive: HKEY_LOCAL_MACHINE
Key: Software\Wow6432Node\Microsoft\Windows\CurrentVersion\Uninstall\{D66A3355-
FEA4-4F60-8BAF-D6CBEDB396D8}
```

    - Click **OK** to close the **Detection Rule** window and click **Next** in the **Create Deployment Type** wizard.
    - Specify the user experience as follows:
        a. **Installation behavior**: Install for system.
        b. **Login Requirement**: Whether a user is logged on.
        c. **Installation Program Visibility**: Normal.
    - Click **Next** in the **Requirements** tab.
    - Click **Next** in the **Dependencies** tab.
    - Click **Next** in the **Summary** and verify that the **Deployment Type** is created successfully.
    - Close the **Create Deployment Type** wizard.
4. In the **Create Application** wizard, click **Next** in the **Deployment Types** tab, click **Next** in the **Summary** tab and confirm that the application is created successfully.

Instructions for deploying application

After creating the package, use the following instruction to deploy it to selected clients:

1. Right-click the application and select **Deploy**.
2. Select the device collection on which you want to install Dell Optimizer.
3. Ensure that the **Automatically distribute content for dependencies** option is checked, click **Next**.
4. In the **Content** tab, click **Add** to select the distribution point.
5. In the **Deployment settings** tab, have the following:
    - Action: Install
    - Purpose: Required

6. In the **Scheduling** tab, click **Next**.
7. In the **User Experience** tab, select User notifications: Display in Software Center, and only show notifications for system restarts.
8. Click **Next** in the **Alerts** tab, click **Next** in the **Summary** tab, and verify deployment completion.

Verify deployment success in client systems

To verify the successful deployment in the client systems:

1. Open **Software Center** in the client system, verify if the Dell Precision Optimizer is installed.

   ⓘ **NOTE: It may take a few minutes for the installation to take place after deploying the application**

2. Go to `C:\\Windows\CCM\Logs` and check **AppDiscovery.Log**, **AppIntent.log**, and **AppEnforce.log** for troubleshooting purpose.

Changing the Dell Precision Optimizer Client behavior using DPOCMD.EXE

Following are the steps to run Dell Precision Optimizer CLI (dpoCmd.exe) on a target system to change the behavior of Dell Precision Optimizer software on that system. The following example illustrates the use of dpoCmd.exe to enable a Dell Precision Optimizer profile (After effects by Adobe).

Create a software package

To create a software package:

1. In the **Configuration Manager** Console:
   a. Open the **Software library** page.
   b. Click **Overview** tab.
   c. Open the **Application Management** tab.
   d. Right click **Packages** and select **Create new package**.
2. In the **Create Package and Program** wizard:
   a. Set the Name: Enable a Dell Precision Optimizer profile.
   b. Specify information about the package and click **Next**.
3. In the **Program Type** tab, select **Standard program**.
4. In the **Standard program** tab:
   a. Name: Enable Adobe after effects
   b. Command line:dpoCmd.exe –enableProfile {2F066600-FA52-4F57-890D-2621D39B0BE9}}
   c. Startup folder: C:\program files\dell\ppo
   d. Run: Normal
   e. Program can run: Whether or not a user is logged in
   f. Run mode: Run with administrative rights
   g. Drive mode: Runs with UNC name
5. In the **Requirements** tab, select **This program can run on any platform**.
6. Click **Next**, review the package summary and verify the package was created successfully.

Deploy the Enable a Dell Precision Optimizer profile software package

1. In the **Configuration Manager** console:
   a. Open the **Software library** page.
   b. Click the **Overview** tab.
   c. Open the **Application Management** tab.
   d. Click **Packages**.
2. Right click the **Enable DPO profile** software package and select **Deploy**.
3. In the **Deploy Software** Wizard:
   a. In the **General** tab, click browse to select the device collection, click **Next**.

b. In the **Content** tab, click **Add** to add a distribution point, click **Next**.

c. In the deployment settings tab, have the following:

   - Action: Install
   - Purpose: Required
   - Check the **Send wake-up** packets box.

d. In the **Scheduling** tab, select the time of deployment and ensure that the **Rerun behavior** option is set to **Always rerun program**. To deploy now, click **New** and select **Assign immediately after this event: As soon as possible**.

e. In the **User Experience** tab ensure that the following check boxes are checked

   i. Software Installation
   ii. System restart(if required to complete installation)
   iii. Commit changes at deadline or during a maintenance window (requires restarts).

f. In the **Distribution points** tab:

   i. Deployment options: Download content from distribution point and run locally.
   ii. Ensure that the **Allow clients to share content with other clients on the same subnet** option is checked.

   .

g. Click **Next** and verify that the deployment is successfully completed.

SSRS Reports

As a system administrator, you can create various reports based on the data collected from Dell Precision Optimizer's WMI providers. If this is desired, you can include the **`sms_def_dpo3.mof`** to extend the database definitions and fetch the corresponding data from Dell Precision Optimizer client systems. You may select some or all the data elements you want to review. The default is set to select all Dell Precision Optimizer data elements.

Importing the sms_def_dpo3.mof file to set hardware inventory classes

1. In the **Configuration Manager** console:
   a. Open the **Administration** page.
   b. Click the **Overview** tab.
   c. Click the **Site Configuration** tab and select **Client Settings**.
2. Right click an existing Client Setting and select the properties or create a new Custom Client Setting.
3. In the **Hardware Inventory** tab, select **Set Classes**.
4. Select **Import** and browse to the location of the `sms_def_dpo3.mof` file.
5. Click **Ok** to import the file and close the **Hardware Inventory Classes** window.

After the collected data is populated in the SQL database, you can create different types of Dell Precision Optimizer reports. The samples (*.RDL) are provided with the Dell Precision Optimizer software. You can import these RDL files, connect them to your SQL database and run the reports.

To Import an .RDL file

1. Open SQL Server data tools.
2. In the Solution Explorer, right click the folder in which you would like to add the .RDL file.
   a. Select **Add Existing Item**.
   b. Select the .RDL file.
3. Once the file is imported, open the file and select the **Design** tab.

To ensure the .RDL file is using the right data source

1. In the **Report Data** pane, click **Datasets** and right click one of the datasets and select **Dataset Properties**.
2. In the **Dataset Properties** window:
   a. the **Use a dataset embedded in my report** is selected.
   b. Under **Data** source, click **New...**.
   c. In the **Data Source Properties** window, select **Use shared data source reference** and select the correct data source.
   d. Click **Ok**.

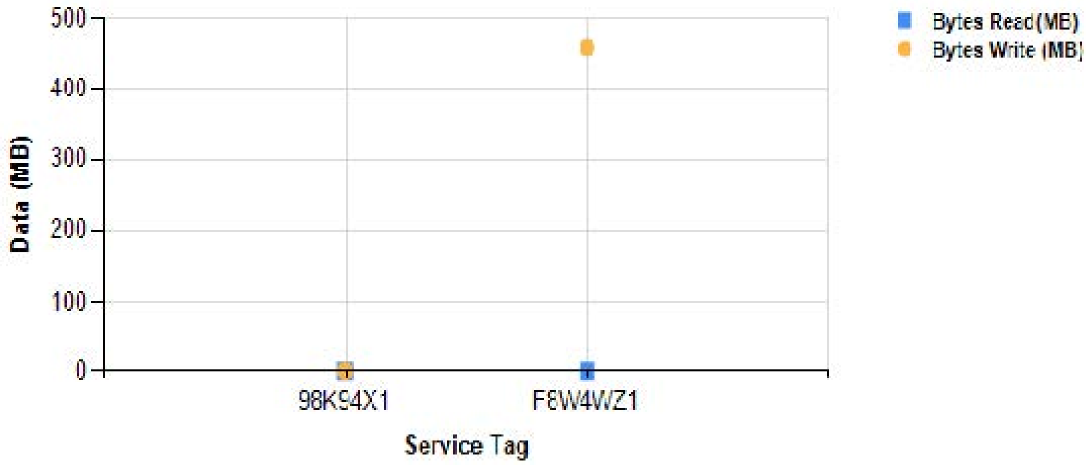
3. Repeat steps 1 and 2 for all other datasets in the **Datasets** folder.

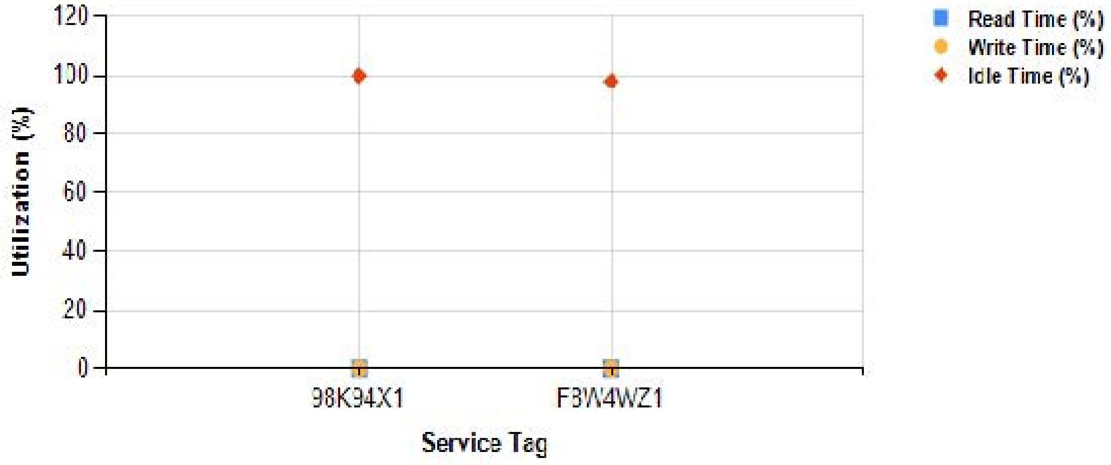
Disk Information across multiple systems

This report displays disk information across multiple systems using their latest system analysis report.

Table 8. Disk information across multiple systems

Service Tag	Bytes Read(MB)	Bytes Write(MB)	Read Time(%)	Write Time(%)	Idle Time (%)
98K94X1	0	0	0	0	100
F8W4WZ1	0	460	0	0	98





Disk information for a single system

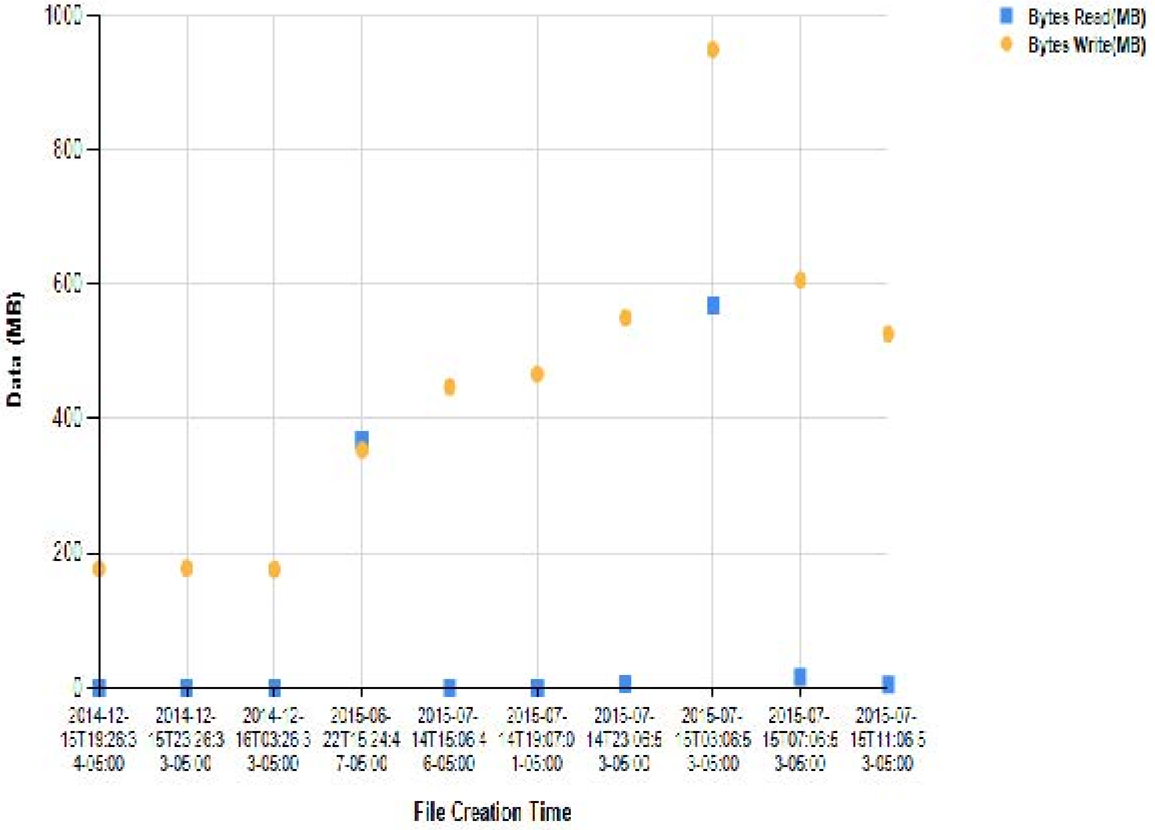
This report displays disk information for a single system across multiple reports.

Table 9. Disk information for a single system

Date Reported	Bytes Read (MB)	Bytes Write (MB)	Read Time (%)	Write Time (%)	Idle Time (%)	Hours On
2015-07-15T11:06:53-05:00	5	526	0	0	98	4
2015-07-15T07:06:53-05:00	16	606	0	1	98	4

Table 9. Disk information for a single system (continued)

Date Reported	Bytes Read (MB)	Bytes Write (MB)	Read Time (%)	Write Time (%)	Idle Time (%)	Hours On
2015-07-15T03:06:53-05:00	568	949	0	0	98	3.1
2015-07-14T23:06:53-05:00	6	550	0	0	98	4
2015-07-14T19:07:01-05:00	0	466	0	0	98	4
2015-07-14T15:06:46-05:00	0	447	0	0	98	3.95
2015-06-22T15:24:47-05:00	369	354	0	0	96	3.48
2014-12-16T03:26:33-05:00	0	176	0	0	99	3.43
2014-12-15T23:26:33-05:00	0	178	0	0	99	4
2014-12-15T19:26:34-05:00	0	177	0	0	98	3.98



KACE

This is one of the methods used by the IT administrators today to centrally manage their systems and software applications. In this section, examples are provided of how IT Administrators can use KACE appliance to manage the Dell Precision Optimizer application.

ⓘ **NOTE: The following steps were verified on KACE appliance 6.4.120756 K1000. If you are using a different version of KACE, then the actual steps may vary slightly.**

Instructions for deploying Dell Precision Optimizer using KACE

An IT administrator can use the following procedure to deploy Dell Precision Optimizer application on select client systems in their domain.

Create an installation script

From your KACE appliance console:

1. Navigate to **Scripting**->**Scripts**->**Choose Action**->**New**.
2. On the **Script Detail** page, enter the following information:

   - **Name** -> Install DPO
   - **Enabled** -> Check the box
   - **Type** -> Online K-Script
   - **Description** -> This script will install DPO client software
   - **Deploy** -> None
   - **Operating Systems** -> Clear the **Select Specific Operating Systems** and select Microsoft Windows
   - **(Alternate) Operating Systems** -> Select specific Windows OS for deployment
   - **Windows Run As** -> Local System
   - **Notify** -> None
   - **Schedule** -> None
   - **Dependencies** -> Add all DPO package files as new dependencies
   - **Tasks** -> Select New Task
   - **Verify** -> Click **Add**, then select **Launch a program**, enter the following data:

     - **Directory** -> $(KACE_DEPENDENCY_DIR)
     - **File** -> PoaInstaller.exe
     - **Wait for Completion** -> CHECKED
     - **Visible** -> UNCHECKED
     - **Parameters** -> LOGFILE=c:\temp\dpo.log /s
     - Save changes.
   - **On Success** -> None
   - **Remediation** -> None
   - **On Remediation Success** -> None
   - **One Remediation Failure** -> None
   - **Tasks** -> Select New Task
   - **Verify** -> Click **Add**, then select **Verify a file exists**, enter the following data:

     - Directory : C:\Program Files\Dell\DPO
     - File : dpoCmd.exe
     - Save Changes.
   - **On Success** -> None
   - **Remediation**-> None
   - **On Remediation Success** -> None
   - **One Remediation Failure** -> None
   - Click **Save**.

Run installation script on select systems

From your KACE appliance console:

1. Click **Scripting** and then select **Run Now**.
2. Select **Install DPO** from the Scripts drop down menu.
3. Under **Labels**, select a label of Windows devices where you wish to deploy Dell Precision Optimizer OR manually select a set of systems.

4. Click **Run Now**.
5. Click **Save**.

This initiates the deployment of Dell Precision Optimizer client software on selected systems. These steps can be customized as well.

Changing Dell Precision Optimizer Client Behavior using DPOCMD.EXE

Following are the steps to run Dell Precision Optimizer CLI (dpoCmd.exe) on a target system to change the behavior of Dell Precision Optimizer software on that system. The following example illustrates the use of dpoCmd.exe to enable a Dell Precision Optimizer profile (After Effects by Adobe).

Create an installation script

From your KACE appliance console:

1. Navigate to **Scripting->**>**Scripts->**>**Choose Action**->>**New**.
2. On the **Script Detail** page, enter the following information:

   - **Name** -> Enable DPO profile after effects
   - **Enabled** -> Check the box
   - **Type** -> Online K-Script
   - **Description** -> This script will enable the **After Effects profile** under DPO client software
   - **Deploy** -> None
   - **Operating Systems** -> Clear the **Select Specific Operating Systems** and select Microsoft Windows
   - **(Alternate) Operating Systems** -> Select specific Windows OS for deployment
   - **Windows Run As** -> Local System
   - **Notify** -> None
   - **Schedule** -> None
   - **Dependencies** -> None
   - **Tasks** -> Select New Task
   - **Verify** -> Click **Add**, then select **Launch a program**, enter the following data:
     - **Directory** -> C:\Program Files\Dell\PPO
     - **File** -> dpoCmd.exe
     - **Wait for Completion** -> CHECKED
     - **Visible** -> UNCHECKED
     - **Parameters** -> -enableProfile {2F066600-FA52-4F57-890D-2621D39B0BE9}
     - Save changes.
   - **On Success** -> None
   - **Remediation** -> None
   - **On Remediation Success** -> None
   - **One Remediation Failure** -> None
   - **Tasks** -> Select New Task
   - **Verify** -> Click **Add**, then select **Verify a file exists**, enter the following data:
     - Directory -> C:\Program Files\Dell\DPO
     - **File** -> dpoCmd.exe
     - Save Changes.
   - **On Success** -> None
   - **Remediation**-> None
   - **On Remediation Success** -> None
   - **One Remediation Failure** -> None
   - Click **Save**.

Run this script on select systems

From your KACE appliance console:

1. Click **Scripting** and then select **Run Now**.

2. Select **Enable DPO profile after effects** from the Scripts drop down menu.
3. Under **Labels**, select a label of Windows devices where you wish to deploy Dell Precision Optimizer OR manually select a set of systems.
4. Click **Run Now**.

Custom reports

Here are some examples on how you can collect some data from Dell Precision Optimizer clients using its WMI classes and create custom reports. Dell Precision Optimizer provides a large set of WMI classes to allow an IT administrator to create a huge variety of reports. The following steps illustrate how to create a Dell Precision Optimizer report. An IT administrator can customize what data must be collected and know how to present that data.

Create Custom Inventory Rules

From your KACE appliance console:

1. Click **Inventory**, then select **Software**.
2. Choose **Action** and select **New**.
3. On the **Software Details** page, enter the following information
    - **Name** -> DPO Sample Inventory
    - **Version** -> v1
    - **Publisher** -> Dell
    - **Supporting Operating Systems** -> Select OSes
    - **Custom Inventory Rule** -> ShellCommandTextReturn(wmic /namespace:\\root\cimv2\DPO Path DPO_Profiles get /ALL)
    - Click **Save**.
4. Click back into the new custom inventory record and hover over the record just created. Note the identifier(ID#) at the end of the URL. The URL with the ID# is visible at the lower left hand corner of the page. You will need this later for creating the report.

Force Inventory Collection

From your KACE appliance console:

1. Click **Inventory** and select **Devices**.
2. Select the device(s) where Dell Precision Optimizer is installed (you could use a SmartLabel for this purpose).
3. Choose **Action** and select **Force Inventory**.
4. After the inventory cycle is completed, navigate into one of the selected devices that was online.
5. On the **Device Detail** page, click **Software**, expand **Custom Inventory Fields**. This displays a list of profiles and their current states.

NOTE: Now that you have Script and Custom Inventory setup, and have completed a Custom Inventory cycle on all desired systems, it is time to use K1000s reporting capabilities. While you can definitely pull the Dell Precision Optimizer information out of the K1000 using a Wizard based report, we are going to use a custom SQL report to process and filter our information into a useful report.

Create report

From your KACE appliance console:

1. Click **Reporting**, then select **Reports**.
2. Choose **Action** and select **New (SQL)**.
3. On the **Report Detail** page, enter the following data:
    - Title -> Dell Precision Optimizer Sample Profile Report
    - Description -> This is a sample Dell Precision Optimizer report ...
    - Category <any> or New Category -> DPO Reports
    - SQL ->

```
SELECT
MACHINE.NAME AS Name,
MACHINE.IP AS Ip,
MACHINE.USER_LOGGED AS LoggedUser,
MACHINE.CS_MANUFACTURER AS Manufacturer,
MACHINE.CS_MODEL AS Model,
MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE AS MACHINE_CUSTOM_INVENTORY_XXXX,
COUNT(MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE) AS Total_Devices FROM
MACHINE_CUSTOM_INVENTORY
JOIN MACHINE ON MACHINE.ID = MACHINE_CUSTOM_INVENTORY.ID
WHERE MACHINE_CUSTOM_INVENTORY.SOFTWARE_ID = XXXX
GROUP BY MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE
ORDER BY MACHINE.CS_MANUFACTURER ASC, MACHINE.CS_MODEL ASC
```

Replace XXXX with the ID# of your custom inventory which was collected above when the Custom Inventory Rule is created.

4. Click **Save**.

Run Report

From your KACE appliance console:

1. Click **Reporting**, then select **Reports**.
2. Search for **DPO** to view your reports.
3. Select the desired report, such as DPO Sample Profile Report, and select the report format you want, say HTML.

A

APPENDIX A - dpoCmd.exe Exit Codes

```
typedef enum { EXIT_CODE_SUCCESS = (int) 0,
EXIT_CODE_ERROR_GET_COMP_NAME = (int) 1,
EXIT_CODE_COINIT_FAILED = (int) 2,
EXIT_CODE_PROFILE_NOT_FOUND = (int) 3,
EXIT_CODE_ERROR = (int) 4,
EXIT_CODE_ERROR_GET_COMP_SID = (int) 5,
EXIT_CODE_COINIT_SECURITY_FAILED = (int) 6,
EXIT_CODE_MISSING_COM_INTERFACE = (int) 7,
EXIT_CODE_PROFILE_GETSTATE_FAILED = (int) 8,
EXIT_CODE_PROFILE_SETSTATE_FAILED = (int) 9,
EXIT_CODE_MISSING_STORE = (int) 40,
EXIT_CODE_NULL_STORE = (int) 41,
EXIT_CODE_READFILE_FAILED = (int) 42,
EXIT_CODE_WRITEFILE_FAILED = (int) 43,
EXIT_CODE_OUT_OF_MEM = (int) 44,
EXIT_CODE_SAVE_STORE_FAILED = (int) 45,
EXIT_CODE_ENCRYPTION_FAILED = (int) 46,
EXIT_CODE_DDV_REPORTS_ALREADY_SCHEDULED = (int) 60,
EXIT_CODE_ENABLE_DDV_FAILED = (int) 61,
EXIT_CODE_SET_DDV_FILTERS_FAILED = (int) 62,
EXIT_CODE_INVALID_DDV_REPORT_DURATION = (int) 63,
EXIT_CODE_SET_REPORT_FREQ_FAILED = (int) 64,
EXIT_CODE_SET_REPORT_NUM_FAILED = (int) 65,
EXIT_CODE_DISABLE_DDV_FAILED = (int) 66,
EXIT_CODE_ERROR_ENUM_DDV_SUBSYSTEMS = (int) 67,
EXIT_CODE_DO_UPDATE_FAILED = (int) 70,
EXIT_CODE_PREV_CHECK_FAILED = (int) 71,
EXIT_CODE_PREV_UPDATE_ACTION_IN_PROGRESS = (int) 72,
EXIT_CODE_REGISTER_EVENTS_FAILED = (int) 73,
EXIT_CODE_CHECK_UPDATE_FAILED = (int) 74,
EXIT_CODE_SET_FEATURE_FAILED = (int) 80,
EXIT_CODE_UI_IS_RUNNING = (int) 98,
EXIT_CODE_USAGE_ERROR = (int) 99
} EXIT_CODE;
```

B

APPENDIX B - WMI Class Definition Files

```
/**************************************************************
* DPOProv.mof
* Last Updated: 03/06/2015
* This file defines the classes exposed by "dpoProv".
**************************************************************/

#pragma autorecover

#pragma namespace("\\\\.\\root\\cimv2")
instance of __Namespace
{
Name = "DPO" ;
};
#pragma namespace("\\\\.\\root\\cimv2\\DPO")
/**************************************************************
* DPO_HardwareInfo
* There is one instance of this class for each summary
* file present on the system.
* The instance will contain all the hardware data and
* the statistics from the summary file.
* HardwareInfoGUID is the unique ID from the summary file.
* HardwareInfoGUID associates this instance with
* with instances of other dependent classes that may have
* multiple instances (eg. DPO_Monitor. DPO_BiosInternalLogs etc.)
**************************************************************/
[Description("An instance of this class contains all the hardware data and "
" statistics from a summary file."),
Dynamic,Provider("DPOProv") ]
class DPO_HardwareInfo
{
[
Description("Unique ID from the summary file."),
Key
]string                 HardwareInfoGUID;
[Description("Revision of Dell Data Vault.")]
string                  DDV_Revision;
[Description("Date/time when the summary file was created.")]
string                  File_Creation_Datetime;
[Description("Date/time when Dell Data Vault began collecting the raw data.")]
string                  Data_Begining_Date;
[Description("Date/time when Dell Data Vault stopped collecting the raw data and generated
the statistics.")]
string                  Data_Ending_Date;
[Description("Indicates whether this summary was created on service startup, regular timer or
on demand.")]
string                  Summary_Type;
[Description("Service Tag of the system obtained from the BIOS.")]
string                  System_Service_Tag;
[Description("Customer Name 1")]
string                  Customer_Name_1;
[Description("Customer Name 2")]
string                  Customer_Name_2;
[Description("Customer Name 3")]
string                  Customer_Name_3;
[Description("Customer specific data 1")]
string                  Customer_Defined_1;
[Description("Customer specific data 2")]
string                  Customer_Defined_2;
[Description("Customer specific data 3")]
string                  Customer_Defined_3;
[Description("System Model")]
string                  System_Model;
[Description("ePPID of the motherboard obtained from the BIOS.")]
```

```
string                  Motherboard_ePPID;
[Description("Current BIOS Version.")]
string                  BIOS_Version;
[Description("Type of the system eg. Laptop or Desktop")]
string                  System_Type;
[Description("Serial number of the CPU.")]
string                  Processor_Serial_Number;
[Description("Processor name.")]
string                  Processor_Information;
[Description("Processor speed.")]
string                  Processor_Speed;
[Description("Average of the percentage LCD brightness when the system was on AC.")]
sint16                  LCD_Avg_Brightness_AC_Pct;
[Description("Average of the percentage LCD brightness when the system was on battery.")]
sint16                  LCD_Avg_Brightness_DC_Pct;
[Description("Video Controller name.")]
string                  Video_Controller;
[Description("Video conroller memory size.")]
sint32                  Video_RAM_Bytes;
[Description("Number of displays on the system.")]
sint16                  Number_of_Displays;
[Description("Operating system, 32bit vs 64bit & system locale information.")]
string                  Operating_System;
[Description("AC adapter power (for notebooks only).")]
string                  AC_Adapter_Type_W;
[Description("Number of hours the system was on.")]
real32                  Hours_On;
[Description("Number of hours the system was on when powered by AC.")]
real32                  Hours_On_AC;
[Description(" Number of hours the system was on when powered by battery (for notebooks
only).")]
real32                  Hours_On_Batt;
[Description("Number of times the AC adapter was inserted in the system (for notebooks
only).")]
sint16                  No_Of_AC_Insertions;
[Description("Number of times the primary battery was inserted into the system (for notebooks
only).")]
// NameChange sint16                  Number_Of_Battery_Insertions;
sint16                  Num_Battery_Insertions;
[Description("Number of times the system was running on battery (for notebooks only).")]
sint16                  Number_Of_Battery_Sessions;
[Description("Number of battery sessions where the session was between 0 to 30 mins (for
notebooks only).")]
sint16                  Battery_Sessions_0_30mins;
[Description("Number of battery sessions where the session was between 30 mins to 1 hr(for
notebooks only).")]
sint16                  Battery_Sessions_30min_1hr;
[Description("Number of battery sessions where the session was between 1 to 2 hrs (for
notebooks only).")]
sint16                  Battery_Sessions_1_2hr;
[Description("Number of battery sessions where the session was between 2 to 3 hrs(for
notebooks only).")]
sint16                  Battery_Sessions_2_3hr;
[Description("Number of battery sessions where the session was between 3 to 4 hrs (for
notebooks only).")]
sint16                  Battery_Sessions_3_4hr;
[Description("Number of battery sessions where the session was between 4 to 6 hrs (for
notebooks only).")]
sint16                  Battery_Sessions_4_6hr;
[Description("Number of battery sessions where the session was between 6 to 8 hrs (for
notebooks only).")]
sint16                  Battery_Sessions_6_8hr;
[Description("Number of battery sessions where the session was between 8 to 12 hrs (for
notebooks only).")]
sint16                  Battery_Sessions_8_12hr;
[Description("Number of battery sessions where the session was greater than 12 hrs (for
notebooks only).")]
sint16                  Battery_Sessions_GT12hr;
[Description("Number of system shutdowns.")]
sint16                  S5_Requests;
[Description("Number of times the system entered Hibernate state (S4).")]
sint16                  S4_Requests;
[Description("Total time the system was in Hibernate state (S4).")]
```

```
real32                  S4_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
between 0 to 30 mins.")]
sint16                  S4_Event_Bin_0_30_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
between 30 mins to 1 hr.")]
sint16                  S4_Event_Bin_30_60_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
between 1 hr to 2 hrs.")]
sint16                  S4_Event_Bin_60_120_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
between 2 to 4 hrs.")]
sint16                  S4_Event_Bin_120_240_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
between 4 to 8 hrs.")]
sint16                  S4_Event_Bin_240_480_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
between 8 to 16 hrs.")]
sint16                  S4_Event_Bin_480_960_mins;
[Description("Number of times the system was in Hibernate state (S4) where the time in S4 was
greater than 16 hrs.")]
sint16                  S4_Event_Bin_GT_960_mins;
[Description("Number of times the system entered Standby/Sleep state (S3).")]
sint16                  S3_Requests;
[Description("Total time the system was in Standby/Sleep state (S3).")]
real32                  S3_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was between 0 to 30 mins.")]
sint16                  S3_Event_Bin_0_30_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was between 30 mins to 1 hr.")]
sint16                  S3_Event_Bin_30_60_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was between 1 hr to 2 hrs.")]
sint16                  S3_Event_Bin_60_120_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was between 2 to 4 hrs.")]
sint16                  S3_Event_Bin_120_240_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was between 4 to 8 hrs.")]
sint16                  S3_Event_Bin_240_480_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was between 8 to 16 hrs.")]
sint16                  S3_Event_Bin_480_960_mins;
[Description("Number of times the system was in Standby/Sleep state (S3) where the time in S3
was greater than 16 hrs.")]
sint16                  S3_Event_Bin_GT_960_mins;
[Description("Average CPU comcumption for all processors combined.")]
real32                  Avg_CPU_Consumption;
[Description("Number of times the CPU consumption was 0%.")]
sint16                  CPU_0_Pct;
[Description("Number of times the CPU consumption was between 0 to 20%.")]
sint16                  CPU_1_20_Pct;
[Description("Number of times the CPU consumption was between 20 to 40%.")]
sint16                  CPU_20_40_Pct;
[Description("Number of times the CPU consumption was between 40 to 60%.")]
sint16                  CPU_40_60_Pct;
[Description("Number of times the CPU consumption was between 60 to 80%.")]
sint16                  CPU_60_80_Pct;
[Description("Number of times the CPU consumption was between 80 to 100%.")]
sint16                  CPU_80_100_Pct;
[Description("Average CPU throttle (for all processors combined).")]
real32                  Avg_CPU_Throttle;
[Description("Number of times the CPU throttle was 0%.")]
sint16                  Throttle_0_Pct;
[Description("Number of times the CPU throttle was between 0 to 25%.")]
sint16                  Throttle_1_25_Pct;
[Description("Number of times the CPU throttle was between 25 to 50%.")]
sint16                  Throttle_25_50_Pct;
[Description("Number of times the CPU throttle was between 50 to 75%.")]
sint16                  Throttle_50_75_Pct;
[Description("Number of times the CPU throttle was between 75 to 100%.")]
sint16                  Throttle_75_100_Pct;
```

```
[Description("Percentage of time the processor (all processors combined) was in C1 state.")]
sint16                  C1_State_Pct;
[Description("Percentage of time the processor (all processors combined) was in C2 state.")]
sint16                  C2_State_Pct;
[Description("Percentage of time the processor (all processors combined) was in C3 state.")]
sint16                  C3_State_Pct;
[Description("Percentage of time the processor (all processors combined) was in C0 state.")]
sint16                  C0_State_Pct;
[Description("Number of LID transitions. One open-close is considered as one transition.")]
sint16                  Lid_Transitions;
[Description("Number of hours the system was ON with LID open.")]
real32                  Lid_Hours_Open;
[Description("Number of hours the system was ON with LID closed.")]
real32                  Lid_Hours_Closed;
[Description("Number of dock events.")]
sint16                  Number_Dock_Events;
[Description("Total system RAM memory.")]
string                  System_RAM_Bytes;
[Description("Total system RAM memory in GB.")]
real32                  System_RAM_GB;
[Description("Percentage of time the system had to access hard disk to resolve page
faults.")]
sint16                  pgs_per_sec_pct;
[Description("Minimum number of pages read from or written to the disk to resolve hard page
faults.")]
sint32                  min_pgs_per_sec;
[Description("Maximum number of pages read from or written to the disk to resolve hard page
faults.")]
sint32                  max_pgs_per_sec;
[Description("Average number of pages read from or written to the disk to resolve hard page
faults.")]
real32                  avg_pgs_per_sec;
[Description("Percentage of time the system had between 0 to 256 MB of free physical
memory.")]
real32                  FreeMem_0_256MB_Pct;
[Description("Percentage of time the system had between 256 MB to 512 MB of free physical
memory.")]
real32                  FreeMem_256_512MB_Pct;
[Description("Percentage of time the system had between 512 MB to 768 MB of free physical
memory.")]
real32                  FreeMem_512_768MB_Pct;
[Description("Percentage of time the system had between 768 MB to 1024 MB of free physical
memory.")]
real32                  FreeMem_768_1024MB_Pct;
[Description("Percentage of time the system had between 1024 MB to 1280 MB of free physical
memory.")]
real32                  FreeMem_1024_1280MB_Pct;
[Description("Percentage of time the system had between 1280 MB to 1536 MB of free physical
memory.")]
real32                  FreeMem_1280_1536MB_Pct;
[Description("PPercentage of time the system had between 1536 MB to 1792 MB of free physical
memory.")]
real32                  FreeMem_1536_1792MB_Pct;
[Description("Percentage of time the system had between 1792 MB to 2048 MB of free physical
memory.")]
real32                  FreeMem_1792_2048MB_Pct;
[Description("Percentage of time the system had between 2048 MB to 2304 MB of free physical
memory.")]
real32                  FreeMem_2048_2304MB_Pct;
[Description("Percentage of time the system had between 2304 MB to 2560 MB of free physical
memory.")]
real32                  FreeMem_2304_2560MB_Pct;
[Description("Percentage of time the system had between 2560 MB to 2816 MB of free physical
memory.")]
real32                  FreeMem_2560_2816MB_Pct;
[Description("Percentage of time the system had between 2816 MB to 3072 MB of free physical
memory.")]
real32                  FreeMem_2816_3072MB_Pct;
[Description("Percentage of time the system had more than 3072 MB of free physical memory.")]
real32                  FreeMem_GT3072MB_Pct;
[Description("Percentage of time the system had between 0 to 256 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_0_256MB_Pct;
```

```
[Description("Percentage of time the system had between 256 MB to 512 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_256_512MB_Pct;
[Description("Percentage of time the system had between 512 MB to 768 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_512_768MB_Pct;
[Description("Percentage of time the system had between 768 MB to 1024 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_768_1024MB_Pct;
[Description("Percentage of time the system had between 1024 MB to 1280 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_1024_1280MB_Pct;
[Description("Percentage of time the system had between 1280 MB to 1536 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_1280_1536MB_Pct;
[Description("PPercentage of time the system had between 1536 MB to 1792 MB of physical
memory available to processes running on the computer.")]
real32                  AvailMem_1536_1792MB_Pct;
[Description("Percentage of time the system had between 1792 MB to 2048 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_1792_2048MB_Pct;
[Description("Percentage of time the system had between 2048 MB to 2304 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_2048_2304MB_Pct;
[Description("Percentage of time the system had between 2304 MB to 2560 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_2304_2560MB_Pct;
[Description("Percentage of time the system had between 2560 MB to 2816 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_2560_2816MB_Pct;
[Description("Percentage of time the system had between 2816 MB to 3072 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_2816_3072MB_Pct;
[Description("Percentage of time the system had more than 3072 MB of physical memory
available to processes running on the computer.")]
real32                  AvailMem_GT3072MB_Pct;
[Description("Average Processor Queue Length.")] real32 Average_PQL; [Description("Minimum
Processor Queue Length.")]
sint16                  Min_PQL;
[Description("Maximum Processor Queue Length.")]
sint16                  Max_PQL;
[Description("Percentage of time the system has PQL = 0.")]
real32                  PQL_0_Pct;
[Description("Percentage of time the system has PQL = 1.")]
real32                  PQL_1_Pct;
[Description("Percentage of time the system has PQL = 2.")]
real32                  PQL_2_Pct;
[Description("Percentage of time the system has PQL = 3.")]
real32                  PQL_3_Pct;
[Description("Percentage of time the system has PQL = 4.")]
real32                  PQL_4_Pct;
[Description("Percentage of time the system has PQL = 5.")]
real32                  PQL_5_Pct;
[Description("Percentage of time the system has PQL between 5 and 10.")]
real32                  PQL_5_10_Pct;
[Description("Percentage of time the system has PQL between 10 and 20.")]
real32                  PQL_10_20_Pct;
[Description("Percentage of time the system has PQL > 20.")]
real32                  PQL_GT20_Pct;
[Description("Average value of total system thread count.")]
real32                  Average_ThreadCount;
[Description("Minimum value of total system thread count.")]
sint64                  Min_ThreadCount;
[Description("Maximum value of total system thread count.")]
sint64                  Max_ThreadCount;
[Description("Standard Deviation value of total system thread count.")]
real32                  Std_Dev_ThreadCount; [Implemented]
void DeleteInstance ();
};
/***********************************************************
* DPO_Monitor
* This has the monitor information from a summary log. There
* may be multiple instances of this class for each summary file.
```

```
*************************************************************/
[Description("Monitor information from the summary log file. This information is extracted
from the EDID data"
" in the registry"),
Dynamic,Provider("DPOProv") ]
class DPO_Monitor
{
[
Description("Unique ID from the summary file."),
Key
]string                  HardwareInfoGUID;
[
Description("Monitor index number, starting from 0."),
 Key
]sint16                 Index;
[Description("Type of monitor (Dell or Non-Dell).")]
string                  Monitor_Type;
[Description("Model name of the monitor.")]
string                  Model_Name;
[Description("Serial number of the monitor.")]
string                  Serial;
[Description("Any vendor specific monitor data.")]
string                  Vendor_Specific_Data;
};

/*************************************************************
* DPO_HardwareInfoToMonitor
* This class associates DPO_Monitor instance(s) with an
* instance of DPO_HardwareInfo.
*************************************************************/
[ Association : ToInstance,
Description("This class associates DPO_Monitor instance(s) "
"with an instance of DPO_HardwareInfo."),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToMonitor
{
[key] DPO_HardwareInfo REF        Antecedent;
[key] DPO_Monitor            REF           Dependent;
};
/*************************************************************
* DPO_BiosInternalLogs
* This has the BIOS logs information from a summary log. There
* may be multiple instances of this class for each summary file.
*************************************************************/
[Description("BIOS logs: All system logs such as BIOS, Diagnostics, IPMI, SMBIOS, SPD logs
etc."),
Dynamic,Provider("DPOProv") ]
class DPO_BiosInternalLogs
{
[
Description("Unique ID from the summary file."),
Key
]string                 HardwareInfoGUID;
[Description("Source of bios log entry. E.g. BIOS, diagnostics, IPMI etc.")]
string                  Name;
[Description("BIOS log entry's time stamp.")]
string                  Time;
[Description("BIOS log sub type based on source of current log entry.")]
string                  LogType;
[Description("Event Code.")]
string                  EventCode;
[Description("Description of current log entry.")]
string                  Descr;
};
/*************************************************************
* DPO_HardwareInfoToBiosInternalLogs
* This class associates DPO_HardwareInfoToBiosInternalLogs
* instance(s) with an instance of DPO_HardwareInfo.
*************************************************************/
[
Association : ToInstance,
Description("This class associates DPO_HardwareInfoToBiosInternalLogs"
"instance(s) with an instance of DPO_HardwareInfo."),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToBiosInternalLogs
{
[key] DPO_HardwareInfo          REF        Antecedent;
[key] DPO_BiosInternalLogs      REF        Dependent;
};
/***********************************************************
* DPO_WWAN
* This has the Wireless WAN adapter information from a summary
* log. There may be multiple instances of this class for each
* summary file.
***********************************************************/
[Description("Wireless WAN adapter information."),
Dynamic,Provider("DPOProv")]
class DPO_WWAN
{
    [
      Description("Unique ID from the summary file."),
      Key
      ]string HardwareInfoGUID;

      [Description("Device name.")]
      string Device_Name;

      [Description("IMEI number.")]
      string IMEI; };
/***********************************************************
* DPO_HardwareInfoToWWAN
* This class associates DPO_WWAN instance(s) with an
* instance of DPO_HardwareInfo.
***********************************************************/
[
Association : ToInstance,
Description("This class associates DPO_WWAN instance(s) with "
"an instance of DPO_HardwareInfo."),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToWWAN
{
[key] DPO_HardwareInfo          REF         Antecedent;
[key] DPO_WWAN                  REF         Dependent;
};
/***********************************************************
* DPO_Battery
* This has the battery information from a summary log. There
* may be multiple instances of this class for each summary file.
***********************************************************/
[Description("Battery information including charge, discharge and dwell statistics."),
Dynamic,Provider("DPOProv") ]
class DPO_Battery
{
      [
       Description("Unique ID from the summary file."),
       Key
 ] string HardwareInfoGUID;
[
Description("Index number of the battery device starting from 1."),
Key
]sint16                Index;
[Description("Manufacture date.")]
string                 Manufacture_Date;
[Description("Serial number.")]
string                 Serial_Number;
[Description("Chemistry.")]
string                 Chemistry;
[Description("Design Capacity in mAH.")]
string                 Design_Capacity_mAH;
[Description("Battery name.")]
```

```
string                 Name;
[Description("Manufacturer's name.")]
string                 Mfg_Name;
[Description("Full charge capacity of the battery.")]
sint32                 FullChargeCapacity;
[Description("Battery cycle count.")]
sint16                 Cycle_Count;
[Description("Total time (in minutes) the battery was in discharge state.")]
real32                 Discharge_Time_mins;
[Description("Number of times the discharge depth was between 0 to 5%.")]
sint16                 Discharge_Depth_0_5_Pct;
[Description("Number of times the discharge depth was between 5 to 10%.")]
sint16                 Discharge_Depth_5_10_Pct;
[Description("Number of times the discharge depth was between 10 to 20%.")]
sint16                 Discharge_Depth_10_20_Pct;
[Description("Number of times the discharge depth was between 20 to 40%.")]
sint16                 Discharge_Depth_20_40_Pct;
[Description("Number of times the discharge depth was between 40 to 60%.")]
sint16                 Discharge_Depth_40_60_Pct;
[Description("Number of times the discharge depth was between 60 to 80%.")]
sint16                 Discharge_Depth_60_80_Pct;
[Description("Number of times the discharge depth was between 80 to 100%.")]
sint16                 Discharge_Depth_80_100_Pct;
[Description("Number of times the start of discharge was between 100 to 94%.")]
//NameChange sint16                 Discharge_Start_Point_100_94_Pct;
sint16                              Discharge_StartPt_GT_94_Pct;
[Description("Number of times the start of discharge was between 94 to 70%.")]
//NameChange sint16                 Discharge_Start_Point_94_70_Pct;
sint16                              Discharge_StartPt_94_70_Pct;
[Description("Number of times the start of discharge was between 70 to 50%.")]
//NameChange                        sint16 Discharge_Start_Point_70_50_Pct;
sint16                              Discharge_StartPt_70_50_Pct;
[Description("Number of times the start of discharge was between 50 to 30%.")]
// NameChange sint16                Discharge_Start_Point_50_30_Pct;
sint16                              Discharge_StartPt_50_30_Pct;
[Description("Number of times the start of discharge was between 30 to 10%.")]
// NameChange sint16                Discharge_Start_Point_30_10_Pct;
sint16                              Discharge_StartPt_30_10_Pct;
[Description("Number of times the start of discharge was between 10 to 0%.")]
// NameChange sint16                Discharge_Start_Point_0_10_Pct;
sint16                              Discharge_StartPt_0_10_Pct;
[Description("Number discharge sessions where final RSOC was less than 15%.")]
// NameChange sint16                Discharge_Sessions_With_End_10_15;
sint16                              Discharge_Sess_End_10_15;
[Description("Number discharge sessions where final RSOC was less than 10%.")]
// NameChange sint16                Discharge_Sessions_With_End_5_10;
sint16                              Discharge_Sess_End_5_10;
[Description("Number discharge sessions where final RSOC was less than 5%.")]
// NameChange sint16                Discharge_Sessions_With_End_LT_5;
sint16                              Discharge_Sess_End_LT_5;
[Description("Average temperature during battery discharge.")]
real32                              Discharge_Temp_Avg;
[Description("Standard deviation of temperature during battery discharge.")]
real32                              Discharge_Temp_Std_Dev;
[Description("Maximum temperature during battery discharge.")]
sint16                              Discharge_Temp_Max;
[Description("Minimum temperature during battery discharge.")]
sint16                              Discharge_Temp_Min;
[Description("Average current (in mA) during battery discharge.")]
real32                              Discharge_mA_Avg;
[Description("Standard deviation of current (in mA) during battery discharge.")]
real32                              Discharge_mA_Std_Dev;
[Description("Maximum current (in mA) during battery discharge.")]
sint32                              Discharge_mA_Max;
[Description("Minimum current (in mA) during battery discharge.")]
sint32                              Discharge_mA_Min;
[Description("Average voltage (in mV) during battery discharge.")]
real32                              Discharge_mV_Avg;
[Description("Standard deviation of voltage (in mV) during battery discharge.")]
real32                              Discharge_mV_Std_Dev;
[Description("Maximum voltage (in mV) during battery discharge.")]
sint32                              Discharge_mV_Max;
[Description("Minimum voltage (in mV) during battery discharge.")]
```

```
sint32                               Discharge_mV_Min;
[Description("Average power (in W) during battery discharge.")]
real32                               Discharge_Power_W_Avg;
[Description("Standard deviation of power (in W) during battery discharge.")]
real32                               Discharge_Power_W_Std_Dev;
[Description("Maximum power (in W) during battery discharge.")]
sint32                               Discharge_Power_W_Max;
[Description("Minimum power (in W) during battery discharge.")]
sint32                               Discharge_Power_W_Min;
[Description("Percentage of time the power during discharge was between 0 to 5W.")]
sint16                               Discharge_Power_0_5W_Pct;
[Description("Percentage of time the power during discharge was between 5 to 10W.")]
sint16                               Discharge_Power_5_10W_Pct;
[Description("Percentage of time the power during discharge was between 10 to 15W.")]
sint16                               Discharge_Power_10_15W_Pct;
[Description("Percentage of time the power during discharge was between 15 to 20W.")]
sint16                               Discharge_Power_15_20W_Pct;
[Description("Percentage of time the power during discharge was between 20 to 25W.")]
sint16                               Discharge_Power_20_25W_Pct;
[Description("Percentage of time the power during discharge was between 25 to 30W.")]
sint16                               Discharge_Power_25_30W_Pct;
[Description("Percentage of time the power during discharge was between 30 to 40W.")]
sint16                               Discharge_Power_30_40W_Pct;
[Description("Percentage of time the power during discharge was between 40 to 50W.")]
sint16                               Discharge_Power_40_50W_Pct;
[Description("Percentage of time the power during discharge was between 50 to 60W.")]
sint16                               Discharge_Power_50_60W_Pct;
[Description("Percentage of time the power during discharge was more than 60W.")]
sint16                               Discharge_Power_GT60W_Pct;
[Description("Total time (in minutes) the battery was in charge state.")]
real32                               Charge_Time_mins;
[Description("Number of sessions where the battery got fully charged.")]
// NameChange sint16                               Charge_Number_Full_Charge_Sessions;
sint16                                             Num_Full_Charge_Sessions;
[Description("Number of sessions where the battery got partially charged.")]
// NameChange sint16                               Charge_Number_Partial_Charge_Sessions;
sint16                                             Num_Partial_Charge_Sessions;
[Description("Average temperature during battery charge.")]
real32                               Charge_Temp_Avg;
[Description("Standard deviation of temperature during battery charge.")]
real32                               Charge_Temp_Std_Dev;
[Description("Maximum temperature during battery charge.")]
sint16                               Charge_Temp_Max;
[Description("Minimum temperature during battery charge.")]
sint16                               Charge_Temp_Min;
[Description("Average current (in mA) during battery charge.")]
real32                               Charge_mA_Avg;
[Description("Standard deviation of current (in mA) during battery charge.")]
real32                               Charge_mA_Std_Dev;
[Description("Maximum current (in mA) during battery charge.")]
sint32
                                 Charge_mA_Max;

[Description("Minimum current (in mA) during battery charge.")]
sint32
                                 Charge_mA_Min;

[Description("Average voltage (in mV) during battery charge.")]
real32
                                     Charge_mV_Avg;

[Description("Standard deviation of voltage (in mV) during battery charge.")]

real32
                                 Charge_mV_Std_Dev;

[Description("Maximum voltage (in mV) during battery charge.")]
 sint32    Charge_mV_Max;

[Description("Minimum voltage (in mV) during battery charge.")]
sint32    Charge_mV_Min;

[Description("Average power (in W) during battery charge when RSOC was less than 60%.")]
```

```
// NameChange real32    Charge_Power_W_RSOC_LE_60_Avg;
            real32    Charge_Pwr_RSOC_LE_60_Avg;

[Description("Standard deviation of power (in W) during battery charge when RSOC was less
than 60%.")]
// NameChange real32    Charge_Power_W_RSOC_LE_60_Std_Dev;
            real32    Charge_Pwr_RSOC_LE_60_StDv;

[Description("Maximum power (in W) during battery charge when RSOC was less than 60%.")]
// NameChange sint16    Charge_Power_W_RSOC_LE_60_Max;
            sint16    Charge_Pwr_RSOC_LE_60_Max;

[Description("Minimum power (in W) during battery charge when RSOC was less than 60%.")]
// NameChange sint16    Charge_Power_W_RSOC_LE_60_Min;
            sint16    Charge_Pwr_RSOC_LE_60_Min;

[Description("Average power (in W) during battery charge when RSOC was more than 60%.")]
// NameChange real32    Charge_Power_W_RSOC_LGT_60_Avg;
            real32    Charge_Pwr_RSOC_LGT_60_Avg;

[Description("Standard deviation of power (in W) during battery charge when RSOC was more
than 60%.")]
// NameChange real32    Charge_Power_W_RSOC_LGT_60_Std_Dev;
            real32    Charge_Pwr_RSOC_LGT_60_StDv;

[Description("Maximum power (in W) during battery charge when RSOC was more than 60%.")]
// NameChange sint16    Charge_Power_W_RSOC_LGT_60_Max;
            sint16    Charge_Pwr_RSOC_LGT_60_Max;

[Description("Minimum power (in W) during battery charge when RSOC was more than 60%.")]
// NameChange sint16    Charge_Power_W_RSOC_LGT_60_Min;
         sint16    Charge_Pwr_RSOC_LGT_60_Min;

[Description("Total time (in minutes) the battery was in dwell state.")]
 real32    Dwell_Time_mins;

[Description("Average RSOC level when the battery was in dwell state.")]
 real32    Dwell_Avg_RSOC_Level;

[Description("Average temperature during battery dwell state.")]
real32    Dwell_Temp_Avg;

[Description("Standard deviation of temperature during battery dwell state.")]
 real32    Dwell_Temp_Std_Dev;

[Description("Maximum temperature during battery dwell state.")]
 sint32    Dwell_Temp_Max;
[Description("Minimum temperature during battery dwell state.")] sint32    Dwell_Temp_Min;
};

/**************************************************************
*    DPO_HardwareInfoToBattery
*    This class associates DPO_Battery instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/ [
Association : ToInstance,
Description(" This class associates DPO_Battery instance(s) with an" " instance of
DPO_HardwareInfo."),
dynamic:ToInstance, PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToBattery
{
[key] DPO_HardwareInfo  REF    Antecedent;
[key] DPO_Battery    REF    Dependent;
};

/**************************************************************
*    DPO_NBFan
*    This has the notebook fan information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/ [Description("Notebook fan
speed statistics."), Dynamic,Provider("DPOProv") ]
class DPO_NBFan
```

```
{
[
Description("Unique ID from the summary file."),
Key
]string    HardwareInfoGUID;

[
Description("Notebook fan index number starting from 0."),
Key
]sint16    Index;

[Description("Location where the fan is present in the system.")]
string    Location;

[Description("Percentage of time fan rpm was non-zero.")]
 sint16    Fan_Duty_Cycle_Pct;

[Description("Fan speed when the summary log was generated.")]
 sint32    RPM;

[Description("Peak fan speed.")]
sint32    Peak_Fan_RPM;

[Description("Average fan speed.")]
real32    Average_Fan_RPM;

[Description("Percentage of time the fan speed was 0 RPM.")] sint16    RPM_0_Pct;

[Description("Percentage of time the fan speed was between 0 and 1000 RPMs.")] sint16
RPM_0_1000_Pct;

[Description("Percentage of time the fan speed was between 1000 and 1700 RPMs.")] sint16
RPM_1000_1700_Pct;

[Description("Percentage of time the fan speed was between 1700 and 2200 RPMs.")]
sint16    RPM_1700_2200_Pct;

[Description("Percentage of time the fan speed was between 2200 and 2600 RPMs.")]
 sint16    RPM_2200_2600_Pct;

[Description("Percentage of time the fan speed was between 2600 and 2900 RPMs.")]
sint16    RPM_2600_2900_Pct;

[Description("Percentage of time the fan speed was between 2900 and 3100 RPMs.")]
 sint16    RPM_2900_3100_Pct;

[Description("Percentage of time the fan speed was between 3100 and 3300 RPMs.")]
sint16    RPM_3100_3300_Pct;

[Description("Percentage of time the fan speed was between 3300 and 3600 RPMs.")]
 sint16    RPM_3300_3600_Pct;

[Description("Percentage of time the fan speed was between 3600 and 3900 RPMs.")]
sint16    RPM_3600_3900_Pct;

[Description("Percentage of time the fan speed was between 3900 and 4200 RPMs.")]
sint16    RPM_3900_4200_Pct;

[Description("Percentage of time the fan speed was between 4200 and 4600 RPMs.")]
sint16    RPM_4200_4600_Pct;

[Description("Percentage of time the fan speed was between 4600 and 5100 RPMs.")]
sint16    RPM_4600_5100_Pct;

[Description("Percentage of time the fan speed was between 5100 and 5600 RPMs.")]
sint16    RPM_5100_5600_Pct;

[Description("Percentage of time the fan speed was between 5600 and 6200 RPMs.")]
sint16    RPM_5600_6200_Pct;

[Description("Percentage of time the fan speed was between 6200 and 7000 RPMs.")]
sint16    RPM_6200_7000_Pct;
```

```
[Description("Percentage of time the fan speed was more than 7000 RPMs.")]
sint16    RPM_GT7000_Pct;
};

/**************************************************************
*    DPO_HardwareInfoToNBFan
*    This class associates DPO_NBFan instance(s) with an
*    instance of DPO_NBFan.
**************************************************************/ [
Association : ToInstance,
Description("This class associates DPO_NBFan instance(s) " "with an instance of DPO_NBFan"),
dynamic:ToInstance, PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToNBFan
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_NBFan    REF    Dependent;
};

/**************************************************************
*    DPO_DTFan
*    This has the deskop fan information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/
[Description("Desktop fan speed statistics."),
Dynamic,Provider("DPOProv") ] class DPO_DTFan
{
[
Description("Unique ID from the summary file."), Key
] string    HardwareInfoGUID;

[
Description("Desktop fan index number starting from 0."), Key
] sint16    Index;

[Description("Location where the fan is present in the system.")] string    Location;

[Description("Percentage of time fan rpm was non-zero.")] sint16    Fan_Duty_Cycle_Pct;

[Description("Fan speed when the summary log was generated.")] sint32    RPM;

[Description("Peak fan speed.")]
sint32    Peak_Fan_RPM;

[Description("Average fan speed.")]
real32    Average_Fan_RPM;

[Description("Percentage of time the fan speed was between 0 and 500 RPMs.")]
sint16    RPM_0_500_Pct;

[Description("Percentage of time the fan speed was between 500 and 900 RPMs.")]
 sint16    RPM_500_900_Pct;

[Description("Percentage of time the fan speed was between 900 and 1100 RPMs.")]
sint16    RPM_900_1100_Pct;

[Description("Percentage of time the fan speed was between 1100 and 1300 RPMs.")]
sint16    RPM_1100_1300_Pct;

[Description("Percentage of time the fan speed was between 1300 and 1600 RPMs.")]
sint16    RPM_1300_1600_Pct;

[Description("Percentage of time the fan speed was between 1600 and 1900 RPMs.")]
sint16    RPM_1600_1900_Pct;

[Description("Percentage of time the fan speed was between 1900 and 2300 RPMs.")]
sint16    RPM_1900_2300_Pct;

[Description("Percentage of time the fan speed was between 2300 and 2700 RPMs.")]
sint16    RPM_2300_2700_Pct;

[Description("Percentage of time the fan speed was between 2700 and 3100 RPMs.")]
sint16    RPM_2700_3100_Pct;
```

```
[Description("Percentage of time the fan speed was between 3100 and 3500 RPMs.")]
sint16    RPM_3100_3500_Pct;

[Description("Percentage of time the fan speed was between 3500 and 4000 RPMs.")]
sint16    RPM_3500_4000_Pct;

[Description("Percentage of time the fan speed was between 4000 and 4500 RPMs.")]
sint16    RPM_4000_4500_Pct;

[Description("Percentage of time the fan speed was between 4500 and 5000 RPMs.")]
sint16    RPM_4500_5000_Pct;
[Description("Percentage of time the fan speed was between 5000 and 5500 RPMs.")]
sint16    RPM_5000_5500_Pct;

[Description("Percentage of time the fan speed was between 5500 and 6000 RPMs.")]
sint16    RPM_5500_6000_Pct;

[Description("Percentage of time the fan speed was more than 6000 RPMs.")]
sint16    RPM_GT6000_Pct;
};

/**************************************************************
*    DPO_HardwareInfoToDTFan
*    This class associates DPO_DTFan instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/ [Association : ToInstance,
Description("This class associates DPO_DTFan instance(s) with " " an instance of
DPO_HardwareInfo"),
dynamic:ToInstance, PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToDTFan
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_DTFan    REF    Dependent;
};

/**************************************************************
*    DPO_Thermistor
*    This has the thermal information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/
[Description("Thermal data from the hardware or BIOS."), Dynamic,Provider("DPOProv") ]
class DPO_Thermistor
{
[
Description("Unique ID from the summary file."),
 Key
] string    HardwareInfoGUID;

[
Description("Thermistor index number starting from 0."),
 Key
] sint16    Index;

[Description("Thermistor location eg CPU, Memory etc.")]
string    Location;

[Description("Temperature read from the thermistor when the summary log was generated.")]
sint16    Temp;

[Description("Maximum temperature read from the thermistor.")]
sint16    Peak_Temp;

[Description("Average temperature read from the thermistor.")]
real32    Avg_Temp;

[Description("Minimum temperature read from the thermistor.")]
sint16    Min_Temp;

[Description("Standard deviation of temperature read from the thermistor.")]
 real32    Std_Dev_Temp;
```

```
[Description("Percentage of time the temperature read was between 0 to 30C.")]
sint16    Temp_0_30C_Pct;

[Description("Percentage of time the temperature read was between 30 to 40C.")]
sint16    Temp_30_40C_Pct;

[Description("Percentage of time the temperature read was between 40 to 50C.")]
sint16    Temp_40_50C_Pct;

[Description("Percentage of time the temperature read was between 50 to 60C.")]
sint16    Temp_50_60C_Pct;

[Description("Percentage of time the temperature read was between 60 to 70C.")]
sint16    Temp_60_70C_Pct;

[Description("Percentage of time the temperature read was between 70 to 80C.")]
sint16    Temp_70_80C_Pct;

[Description("Percentage of time the temperature read was between 80 to 90C.")]
sint16    Temp_80_90C_Pct;

[Description("Percentage of time the temperature read was between 90 to 100C.")]
sint16    Temp_90_100C_Pct;

[Description("Percentage of time the temperature read was more than 100C.")]
sint16    Temp_GT100C_Pct;
};

/**************************************************************
*    DPO_HardwareInfoToThermistor
*    This class associates DPO_Thermistor instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_Thermistor instance(s) " " with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToThermistor
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_Thermistor    REF    Dependent;
};

/**************************************************************
*    DPO_Logical_Processor
*    This has the logical processor information from a summary log.
*    There may be multiple instances of this class for each summary
*    file.
**************************************************************/
[Description("Logical processors statistics."),
Dynamic,Provider("DPOProv") ] class DPO_Logical_Processor
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("Index of logical processor starting from 0."),
Key
]
sint16    Index;
[Description("Percentage of time the logical processor was used, ie. when the CPU consumption
was non-zero.")]
sint16    Used_Pct;

[Description("Average processor utilization.")]
sint16    Avg_Utilization_Pct;
};
```

```
/**************************************************************
*    DPO_HardwareInfoToLogical_Processor
*    This class associates DPO_Logical_Processor instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_Logical_Processor " " instance(s) with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToLogical_Processor
{
[key] DPO_HardwareInfo    REF    Antecedent;
[key] DPO_Logical_Processor    REF    Dependent;
};

/**************************************************************
*    DPO_Disk
*    This has the physical disk information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/ [Description("Information for
each physical disk found on the system."), Dynamic,Provider("DPOProv") ]
class DPO_Disk
{
[
Description("Unique ID from the summary file."),
 Key
]
string    HardwareInfoGUID;

[
Description("Index of the physical disk starting from 0."),
 Key
]
sint16    Index;

[Description("Name of the disk.")]
string    Name;

[Description("Disk model number.")]
string    Make_Model;

[Description("Total disk size in MBs.")]
sint32    Size_MB;

[Description("Disk ePPID.")]
string    ePPID;

[Description("Unique ID assigned to this disk instance.")]
string    DiskGUID;

[Description("Percentage of time the disk was busy in read operations.")]
 sint16    Read_Time_Pct;

[Description("Percentage of time the disk was busy in write operations.")]
sint16    Write_Time_Pct;

[Description("Percentage of time the disk was idle.")]
sint16    Idle_Time_Pct;

[Description("Total data read from the disk in MB.")]
 sint32    Bytes_Read_MB;

[Description("Total data written to the disk in MB.")]
sint32    Bytes_Write_MB;
};

/**************************************************************
*    DPO_HardwareInfoToDisk
*    This class associates DPO_Disk instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
```

```
[Association : ToInstance,
Description("This class associates DPO_Disk instance(s) with " " an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
 PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToDisk
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_Disk    REF    Dependent;
};

/**********************************************************
*    DPO_Partition
*    This has the logical partition information from a summary log.
*    There may be multiple instances of this class for each summary
*    file.
**********************************************************/
 [Description("Information for each partition found on a disk."),
Dynamic,Provider("DPOProv") ]
class DPO_Partition
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("Unique ID assigned to the physical disk instance to which this partition
belongs."),
 Key
]
string    DiskGUID;

[
Description("Parition index number starting from 0."),
 Key
]
sint16    Index;

[Description("Partition name, eg C:.")]
string    Name;

[Description("Total size of the partition in MBs.")]
sint32    Size_MB;
};

/**********************************************************
*    DPO_DiskToPartition
*    This class associates DPO_Partition instance(s) with an
*    instance of DPO_Disk.

**********************************************************/
[Association : ToInstance,
Description(" This class associates DPO_Partition instance(s) " " with an instance of
DPO_Disk"),
dynamic:ToInstance,
 PROVIDER("DPOProv"):ToInstance
]
class DPO_DiskToPartition
{
[key] DPO_Disk        REF    Antecedent;
[key] DPO_Partition    REF    Dependent;
};

/**********************************************************
*    DPO_LanAdapter
*    This has the lan adapter information from a summary log. There
*    may be multiple instances of this class for each summary file.
**********************************************************/
[Description("LAN adapter information and statistics."),
Dynamic,Provider("DPOProv") ]
```

```
class DPO_LanAdapter
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("LAN adapter index number starting from 0."),
 Key
]
sint16    Index;

[Description("LAN adapter name.")]
string    Name;

[Description("LAN adapter's MAC address.")]
string    MAC;

[Description("Percentage of time the adapter was busy when the system was on AC.")]
sint16    ActivityAC_Pct;

[Description("Percentage of time the adapter was busy when the systen was on battery.")]
sint16    ActivityDC_Pct;
};

/**************************************************************
*    DPO_HardwareInfoToLanAdapter
*    This class associates DPO_LanAdapter instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_LanAdapter instance(s) " " with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToLanAdapter
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_LanAdapter    REF    Dependent;
};

/**************************************************************
*    DPO_WlanAdapter

*    This has the wlan adapter information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/ [Description("Wireless LAN
adapter information and statistics."), Dynamic,Provider("DPOProv") ]
class DPO_WlanAdapter
{
[
Description("Unique ID from the summary file."),
 Key
]
string    HardwareInfoGUID;

[
Description("Wireless LAN adapter index number starting from 0."),
 Key
]
sint16    Index;

[Description("Wireless LAN adapter name.")]
string    Name;

[Description("Wireless LAN adapter's MAC address.")]
 string    MAC;

[Description("Percentage of time the radio was off when the system was on AC.")]
sint16    WlanRadioOffAC_Pct;
```

```
[Description("Percentage of time the WLAN adapter was connected when the system was on AC.")]
 sint16    WlanConnectedAC_Pct;

[Description("Percentage of time the adapter was not connected when the system was on AC.")]
 sint16    WlanDisconnectedAC_Pct;

[Description("Percentage of time the radio was off when the system was on battery.")]
sint16    WlanRadioOffDC_Pct;

[Description("Percentage of time the WLAN adapter was connected when the system was on
battery.")]
 sint16    WlanConnectedDC_Pct;

[Description("Percentage of time the adapter was not connected when the system was on
battery.")]
sint16    WlanDisconnectedDC_Pct;
};

/***************************************************************
*    DPO_HardwareInfoToWlanAdapter
*    This class associates DPO_WlanAdapter instance(s) with an
*    instance of DPO_HardwareInfo.
***************************************************************/
[Association : ToInstance,
Description("This class associates DPO_WlanAdapter instance(s) " " with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToWlanAdapter
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_WlanAdapter    REF    Dependent;
};

/***************************************************************
*    DPO_Smart
*    This has the SMART information from a summary log. There
*    may be multiple instances of this class for each summary file.
***************************************************************/

[Description("SMART data from all disks (if reported by the disk)."),
Dynamic,Provider("DPOProv") ]
class DPO_Smart
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("Smart data index number starting from 0."),
Key
]
sint16    Index;

[Description("Name eg, SMART0.")]
string    Name;

[Description("Disk Model number.")]
string    Model;

[Description("Average disk temperature read using SMART.")]
 real32    Temp_Avg;

[Description("Standard deviation of disk temperature read using SMART.")]
real32    Temp_Std_Dev;

[Description("Minimum disk temperature read using SMART.")]
sint16    Temp_Min;
```

```
[Description("Maximum disk temperature read using SMART.")]
sint16    Temp_Max;

[Description("Percentage of time disk temperature read using SMART was between 0 to 30C.")]
sint16    Temp_0_30_Pct;

[Description("Percentage of time disk temperature read using SMART was between 30 to 40C.")]
sint16    Temp_30_40_Pct;

[Description("Percentage of time disk temperature read using SMART was between 40 to 50C.")]
sint16    Temp_40_50_Pct;

[Description("Percentage of time disk temperature read using SMART was between 50 to 60C.")]
sint16    Temp_50_60_Pct;

[Description("Percentage of time disk temperature read using SMART was between 60 to 70C.")]
sint16    Temp_60_70_Pct;

[Description("Percentage of time disk temperature read using SMART was between 70 to 80C.")]
sint16    Temp_70_80_Pct;

[Description("Percentage of time disk temperature read using SMART was more than 80C.")]
sint16    Temp_GT_80_Pct;

[Description("Shock events.")]
sint32    Shock_Events;

[Description("Shock events (normalized value).")]
uint8    Shock_Events_Normalized;

[Description("Shock events (worst value).")]
uint8    Shock_Events_Worst;

[Description("Shock events (threshold value).")]
uint8    Shock_Events_Threshold;
[Description("Total blocks read from the disk.")]
sint64    Blks_Read;

[Description("Total blocks read from the disk (normalized value).")]
uint8    Blks_Read_Normalized;

[Description("Total blocks read from the disk (worst value).")]
uint8    Blks_Read_Worst;

[Description("Total blocks read from the disk (threshold value).")]
uint8    Blks_Read_Threshold;

[Description("Total blocks written to the disk.")] sint64    Blks_Written;

[Description("Total blocks written to the disk (normalized value).")]
uint8    Blks_Written_Normalized;

[Description("Total blocks written to the disk (worst value).")]
uint8    Blks_Written_Worst;

[Description("Total blocks written to the disk (threshold value).")]
uint8    Blks_Written_Threshold;

[Description("Start stop count.")]
sint64    Start_Stop_Count;

[Description("Start stop count (normalized value).")]
uint8    Start_Stop_Count_Normalized;

[Description("Start stop count (worst value).")]
uint8    Start_Stop_Count_Worst;

[Description("Start stop count (threshold value).")]
uint8    Start_Stop_Count_Threshold;

[Description("Load unload cycle count.")]
sint64    Load_Unload_Cycle_Count;
```

```
[Description("Load unload cycle count (normalized value).")]
uint8    Load_Unload_Cycle_Count_Normalized;

[Description("Load unload cycle count (worst value).")]
uint8    Load_Unload_Cycle_Count_Worst;

[Description("Load unload cycle count (threshold value).")]
uint8    Load_Unload_Cycle_Count_Threshold;

[Description("Total power on hours.")]
sint64    Power_On_Hours;

[Description("Total power on hours (normalized value).")]
uint8    Power_On_Hours_Normalized;

[Description("Total power on hours (worst value).")]
uint8    Power_On_Hours_Worst;

[Description("Total power on hours (threshold value).")]
uint8    Power_On_Hours_Threshold;

[Description("Realloc sector count.")]
sint64    ReAlloc_Sector_Count;

[Description("Realloc sector count (normalized value).")]
uint8    ReAlloc_Sector_Count_Normalized;

[Description("Realloc sector count (worst value).")]
uint8    ReAlloc_Sector_Count_Worst;

[Description("Realloc sector count (threshold value).")]
uint8    ReAlloc_Sector_Count_Threshold;

[Description("Head flying hours.")]
sint64    Head_Flying_Hours;

[Description("Head flying hours (normalized value).")]
uint8    Head_Flying_Hours_Normalized;

[Description("Head flying hours (worst value).")]
uint8    Head_Flying_Hours_Worst;

[Description("Head flying hours (threshold value).")]
uint8    Head_Flying_Hours_Threshold;

[Description("Raw read error rate.")]
sint64    Raw_Read_Error_Rate;

[Description("Raw read error rate (normalized value).")]
uint8    Raw_Read_Error_Rate_Normalized;

[Description("Raw read error rate (worst value).")]
uint8    Raw_Read_Error_Rate_Worst;

[Description("Raw read error rate (threshold value).")]
uint8    Raw_Read_Error_Rate_Threshold;

[Description("Spin up time.")]
sint64    Spin_Up_Time;

[Description("Spin up time (normalized value).")]
uint8    Spin_Up_Time_Normalized;

[Description("Spin up time (worst value).")]
uint8    Spin_Up_Time_Worst;

[Description("Spin up time (threshold value).")]
uint8    Spin_Up_Time_Threshold;

[Description("Free fall count.")]
sint64    Free_Fall_Count;

[Description("Free fall count (normalized value).")]
```

```
uint8    Free_Fall_Count_Normalized;

[Description("Free fall count (worst value).")]
uint8    Free_Fall_Count_Worst;

[Description("Free fall count (threshold value).")]
uint8    Free_Fall_Count_Threshold;

[Description("Power cycle count.")]
sint64    Power_Cycle_Count;

[Description("Power cycle count (normalized value).")]
uint8    Power_Cycle_Count_Normalized;

[Description("Power cycle count (worst value).")]
uint8    Power_Cycle_Count_Worst;

[Description("Power cycle count (threshold value).")]
uint8    Power_Cycle_Count_Threshold;

[Description("Program fail count.")]
sint64    Program_Fail_Count;

[Description("Program fail count (normalized value).")]
uint8    Program_Fail_Count_Normalized;

[Description("Program fail count (worst value).")]
uint8    Program_Fail_Count_Worst;

[Description("Program fail count (threshold value).")]
uint8    Program_Fail_Count_Threshold;

[Description("Erase fail count.")]
sint64    Erase_Fail_Count;

[Description("Erase fail count (normalized value).")]
uint8    Erase_Fail_Count_Normalized;

[Description("Erase fail count (worst value).")]
uint8    Erase_Fail_Count_Worst;

[Description("Erase fail count (threshold value).")]
uint8    Erase_Fail_Count_Threshold;

[Description("Wear leveling count.")]
sint64    Wear_Leveling_Count;

[Description("Wear leveling count (normalized value).")]
uint8    Wear_Leveling_Count_Normalized;

[Description("Wear leveling count (worst value).")]
uint8    Wear_Leveling_Count_Worst;

[Description("Wear leveling count (threshold value).")]
uint8    Wear_Leveling_Count_Threshold;

[Description("User reserved block count.")]
sint64    User_Rsvd_Block_Count;

[Description("User reserved block count (normalized value).")]
uint8    User_Rsvd_Block_Count_Normalized;

[Description("User reserved block count (worst value).")]
uint8    User_Rsvd_Block_Count_Worst;

[Description("User reserved block count (threshold value).")]
uint8    User_Rsvd_Block_Count_Threshold;

[Description("User reserved block count (SSD Total).")]
sint64    User_Rsvd_Block_Count_Total;

[Description("User reserved block count (SSD Total) (normalized value).")]
uint8    User_Rsvd_Block_Count_Total_Normalized;
```

```
[Description("User reserved block count (SSD Total) (worst value).")]
uint8    User_Rsvd_Block_Count_Total_Worst;

[Description("User reserved block count (SSD Total) (threshold value).")]
uint8    User_Rsvd_Block_Count_Total_Threshold;

[Description("Unused reserved block count.")]
sint64    Unused_Rsvd_Block_Count;

[Description("Unused reserved block count (normalized value).")]
uint8    Unused_Rsvd_Block_Count_Normalized;

[Description("Unused reserved block count (worst value).")]
uint8    Unused_Rsvd_Block_Count_Worst;

[Description("Unused reserved block count (threshold value).")]
uint8    Unused_Rsvd_Block_Count_Threshold;

[Description("Program fail count (SSD Total).")]
sint64    Program_Fail_Count_Total;

[Description("Program fail count (SSD Total) (normalized value).")]
uint8    Program_Fail_Count_Total_Normalized;

[Description("Program fail count (SSD Total) (worst value).")]
uint8    Program_Fail_Count_Total_Worst;

[Description("Program fail count (SSD Total) (threshold value).")]
uint8    Program_Fail_Count_Total_Threshold;

[Description("Erase fail count (SSD Total).")]
sint64    Erase_Fail_Count_Total;

[Description("Erase fail count (SSD Total) (normalized value).")]
uint8    Erase_Fail_Count_Total_Normalized;

[Description("Erase fail count (SSD Total) (worst value).")]
uint8    Erase_Fail_Count_Total_Worst;

[Description("Erase fail count (SSD Total) (threshold value).")]
uint8    Erase_Fail_Count_Total_Threshold;

[Description("Uncorrectable error count.")]
sint64    Uncorrectable_Error_Count;

[Description("Uncorrectable error count (normalized value).")]
uint8    Uncorrectable_Error_Count_Normalized;

[Description("Uncorrectable error count (worst value).")]
uint8    Uncorrectable_Error_Count_Worst;

[Description("Uncorrectable error count (threshold value).")]
uint8    Uncorrectable_Error_Count_Threshold;

[Description("ECC rate.")]
sint64    Ecc_Rate;

[Description("ECC rate (normalized value).")]
uint8    Ecc_Rate_Normalized;

[Description("ECC rate (worst value).")]
uint8    Ecc_Rate_Worst;

[Description("ECC rate (threshold value).")]
uint8    Ecc_Rate_Threshold;
};

/**************************************************************
*    DPO_HardwareInfoToSmart
*    This class associates DPO_Smart instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
```

```
[Association : ToInstance,
Description("This class associates DPO_Smart instance(s) with" " an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance

]
class DPO_HardwareInfoToSmart
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_Smart    REF    Dependent;
};

/**************************************************************
*    DPO_DIMM
*    This has the DIMM information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/
[Description("DIMM information for all DIMMs reported by the BIOS."),
 Dynamic,Provider("DPOProv") ]
class DPO_DIMM
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("DIMM index number starting from 0."),
Key
]
sint16    Index;

[Description("DIMM name.")]
string    Name;

[Description("DIMM manufacturer's name.")]
string    Manufacturer;

[Description("DIMM part number.")]
string    Part;

[Description("DIMM location.")]
string    Location;

[Description("DIMM serial number.")]
string    Serial;
};

/**************************************************************
*    DPO_HardwareInfoToDIMM
*    This class associates DPO_DIMM instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_DIMM instance(s) with " "an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToDIMM
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_DIMM    REF    Dependent;
};

/**************************************************************
*    DPO_Logical_Drive_Info_New
*    This has the new logical drive information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/
```

```
[Description("Logical drive information for all logical drives found on the system."),
Dynamic,Provider("DPOProv") ]
class DPO_Logical_Drive_Info_New
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("Logical drive index number starting from 0."),
Key
]
sint16    Index;

[Description("Logical drive name, eg. C:.")]
string    Name;

[Description("Total logical drive size in MBs.")]
sint64    Size_MB;

[Description("Total free space on the logical drive in MBs.")]
sint64    Freespace_MB;
};

/**************************************************************
*    DPO_HardwareInfoToLogicalDriveInfoNew
*    This class associates DPO_Logical_Drive_Info_New instance(s) with an
*    instance of DPO_HardwareInfo.
*************************************************************/
[Association : ToInstance,
Description("This class associates DPO_Logical_Drive_Info_New instance(s) with " "an instance
of DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToLogicalDriveInfoNew
{
[key] DPO_HardwareInfo    REF    Antecedent;
[key] DPO_Logical_Drive_Info_NewREF    Dependent;
};


/**************************************************************
*    DPO_CrashInfo
*    This has the system bug check information from a summary
*    log. There may be multiple instances of this class for
*    each summary file.
*************************************************************/
[Description("System crash information from the summary log file. This information is
extracted from" " Windows Event Log"),
Dynamic,Provider("DPOProv") ]
class DPO_CrashInfo
{
[
Description("Unique ID from the summary file."),
Key
]
string  HardwareInfoGUID;

[
Description("Index number, starting from 0."),
Key
]

sint16  Index;

[Description("Local Time stamp (with time zone) of the date/time the crash was generated.")]
string  BugCheck_Time;

[Description("Information string from Windows Event Log.")]
string  BugCheck_String;
```

```
[Description("MiniDump File Name.")]
string  Minidump_FileName;

[Description("MiniDump File Data Length")]
uint32  Minidump_DataLen;

[Description("MiniDump File Binary Data")]
uint8   Minidump_Data [];

[Description("Bug check stack frame 1")]
string  BugCheck_Stack1;

[Description("Bug check stack frame 2")]
string  BugCheck_Stack2;

[Description("Bug check stack frame 3")]
string  BugCheck_Stack3;

[Description("Bug check stack frame 4")]
string  BugCheck_Stack4;

[Description("Bug check stack frame 5")]
string  BugCheck_Stack5;
};

/**************************************************************
*    DPO_HardwareInfoToCrashInfo
*    This class associates DPO_CrashInfo instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_CrashInfo instance(s) with " "an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToCrashInfo
{
[key] DPO_HardwareInfo    REF    Antecedent;
[key] DPO_CrashInfo    REF    Dependent;
};

/**************************************************************
*    DPO_FreeFall
*    This has Free fall information from a summary
*    log. Right now, there is only one instance of this class for
*    each summary file but that may change in the future.
**************************************************************/

[Description("Free fall information from the summary log file."),
Dynamic,Provider("DPOProv") ]
class DPO_FreeFall
{
[
Description("Unique ID from the summary file."),
Key
]
string  HardwareInfoGUID;
[
Description("Number of times free fall condition was detected since last summary file was
generated.")
]
sint16    FreeFallCount;
};


/**************************************************************
*    DPO_HardwareInfoToFreeFall
*    This class associates DPO_FreeFall instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_FreeFall instance(s) with " "an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToFreeFall
{
[key] DPO_HardwareInfo    REF    Antecedent;
[key] DPO_FreeFall    REF    Dependent;
};

/***************************************************************
*    DPO_Cable
*    This has the cable log information from a summary log. There
*    may be multiple instances of this class for each summary file.
***************************************************************/
[Description("Cable logs: List of all cables attached, required but not connected in the
system."), Dynamic,Provider("DPOProv") ]
class DPO_Cable
{
[
Description("Unique ID from the summary file."),
Key
] string    HardwareInfoGUID;

[
Description("Cable index number, starting from 0."),
Key
] sint16    Index;

[Description("Name of cable.")]
string    Name;

[Description("Cable's connection status.")]
string    Status;
};

/***************************************************************
*    DPO_HardwareInfoToCableLogs
*    This class associates DPO_HardwareInfoToCable
*    instance(s) with an instance of DPO_HardwareInfo.
***************************************************************/
[Association : ToInstance,
Description("This class associates DPO_HardwareInfoToCable" " instance(s) with an instance of
DPO_HardwareInfo."),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToCable

{
[key] DPO_HardwareInfo        REF    Antecedent;
[key] DPO_Cable    REF    Dependent;
};

/***************************************************************
*    DPO_CableChangeHistory
*    This has the cable change history information from a summary log.
*    There may be multiple instances of this class for each summary
*    file.
***************************************************************/
[Description("Information for status change for a cable."),
Dynamic,Provider("DPOProv") ]
class DPO_CableChangeHistory
{
[Description("Name of cable.")]
string    Name;

[Description("Timestamp when the change in cable status was noted.")]
string    Timestamp;

[Description("Cable's connection status.")]
string    Status;
```

```
};

/***********************************************************
*    DPO_CableToCableChangeHistory
*    This class associates DPO_CableChangeHistory instance(s) with an
*    instance of DPO_Cable.
**********************************************************/
[Association : ToInstance,
Description(" This class associates DPO_CableChangeHistory instance(s) " " with an instance
of DPO_Cable"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_CableToCableChangeHistory
{
[key] DPO_Cable    REF    Antecedent;
[key] DPO_CableChangeHistory    REF    Dependent;
};

/***********************************************************
*    DPO_BTModule
*    This has the bluetooth module information from a summary log. There
*    may be multiple instances of this class for each summary file.
**********************************************************/
[Description("Bluetooth module information and statistics."),
 Dynamic,Provider("DPOProv") ]
class DPO_BTModule
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("Bluetooth module index number starting from 0."),
Key
]
sint16    Index;

[Description("Bluetooth module name.")]
string    Name;

[Description("Bluetooth modoule's address.")]
string    Address;

[Description("Percentage of time the radio was on when the system was on AC.")]
sint16    BTRadioOnAC_Pct;

[Description("Percentage of time the bluetooth module was connected when the system was on
AC.")]
sint16    BTConnectedAC_Pct;

[Description("Percentage of time the module was not connected when the system was on AC.")]
sint16    BTDisconnectedAC_Pct;

[Description("Percentage of time the radio was on when the system was on battery.")]
sint16    BTRadioOnDC_Pct;

[Description("Percentage of time the bluetooth module was connected when the system was on
battery.")]
sint16    BTConnectedDC_Pct;

[Description("Percentage of time the module was not connected when the system was on
battery.")]
sint16    BTDisconnectedDC_Pct;
};

/***********************************************************
*    DPO_HardwareInfoToBTModule
*    This class associates DPO_BTModule instance(s) with an
*    instance of DPO_HardwareInfo.
**********************************************************/
```

```
[Association : ToInstance,
Description("This class associates DPO_BTModule instance(s) " " with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToBTModule
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_BTModule    REF    Dependent;
};


/**************************************************************
*    DPO_IntelPerf
*    This has the Intel performance information from a summary log. There
*    may be multiple instances of this class for each summary file.
**************************************************************/
 [Description("Intel performance information and statistics."),
Dynamic,Provider("DPOProv") ]
class DPO_IntelPerf
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("Processor number starting from 0."),
Key
]
sint16    Index;

[Description("Minimum active relative frequency of the processor.")]
real32    Min_ActiveRelativeFreq;

[Description("Maximum active relative frequency of the processor.")]
 real32    Max_ActiveRelativeFreq;

[Description("Averaye active relative frequency of the processor.")]
real32    Avg_ActiveRelativeFreq;

[Description("Percentage of time the processor was in turbo mode when the system was on
AC.")]
real32    TurboResidencyACPct;

[Description("Percentage of time the processor was in turbo mode when the system was on
battery.")]
real32    TurboResidencyDCPct;
};

/**************************************************************
*    DPO_HardwareInfoToIntelPerf
*    This class associates DPO_IntelPerf instance(s) with an
*    instance of DPO_HardwareInfo.
**************************************************************/
[Association : ToInstance,
Description("This class associates DPO_IntelPerf instance(s) " " with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToIntelPerf
{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_IntelPerf    REF    Dependent;
};

/**************************************************************
*    DPO_Graphics
*    This has the graphics information from a summary log. There
*    may be multiple instances of this class for each summary file.
```

```
**************************************************************/
[Description("Graphics performance information and statistics."),
Dynamic,Provider("DPOProv") ]
class DPO_Graphics
{
[
Description("Unique ID from the summary file."),
Key
]
string    HardwareInfoGUID;

[
Description("GPU number starting from 0."),
Key
]
sint16    Index;

[Description("Minumum GPU utilization.")]
sint16    Min_GpuUtilization;

[Description("Maximum GPU utilization.")]
sint16    Max_GpuUtilization;

[Description("Average GPU utilization.")]
real32    Avg_GpuUtilization;

[Description("Percentage of time GPU was at 0% utilization.")]
real32    GpuUtilization_0_Pct;

[Description("Minumum graphics memory utilization.")]
sint16    Min_MemUtilization;

[Description("Maximum graphics memory utilization.")]
 sint16    Max_MemUtilization;

[Description("Average graphics mempry utilization.")]
real32    Avg_MemUtilization;

[Description("Percentage of time graphics memory was at 0% utilization.")]
real32    MemUtilization_0_Pct;

[Description("Minumum graphics engine utilization.")]
sint16    Min_EngineUtilization;

[Description("Maximum graphics engine utilization.")]
sint16    Max_EngineUtilization;

[Description("Average graphics engine utilization.")]
real32    Avg_EngineUtilization;

[Description("Percentage of time graphics engine was at 0% utilization.")]
real32    EngineUtilization_0_Pct;

[Description("Minumum graphics bus utilization.")]
sint16    Min_BusUtilization;

[Description("Maximum graphics bus utilization.")]
sint16    Max_BusUtilization;

[Description("Average graphics bus utilization.")]
real32    Avg_BusUtilization;

[Description("Percentage of time graphics bus was at 0% utilization.")]
real32    BusUtilization_0_Pct;

[Description("Minumum graphics fan speed. The fan speed is reported in percentage.")]
sint16    Min_FanSpeedPct;

[Description("Maximum graphics fan speed. The fan speed is reported in percentage.")]
sint16    Max_FanSpeedPct;

[Description("Average graphics fan speed. The fan speed is reported in percentage.")]
real32    Avg_FanSpeedPct;
```

```
[Description("Percentage of time graphics fan was at 0% speed.")]
real32    FanSpeedPct_0_Pct;

[Description("Minumum GPU temperature.")]
sint16    Min_Temperature;

[Description("Maximum GPU temperature.")]
sint16    Max_Temperature;

[Description("Average GPU temperature.")]
real32    Avg_Temperature;
};

/***************************************************************
*    DPO_HardwareInfoToGraphics
*    This class associates DPO_Graphics instance(s) with an
*    instance of DPO_HardwareInfo.
***************************************************************/
[Association : ToInstance,
Description("This class associates DPO_Graphics instance(s) " " with an instance of
DPO_HardwareInfo"),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToGraphics

{
[key] DPO_HardwareInfo REF    Antecedent;
[key] DPO_Graphics    REF    Dependent;
};

/*
Current DPO version

Features Enabled/Disabled (e.g.GUI control listed above) Time of last Check for Profiles


Time of last System Update Time of last Check for Updates
Profile trigger history (time, profile, policy)
*/

/***************************************************************
*    DPO_Info
***************************************************************/
[Description("DPO Info"),
Dynamic,Provider("DPOProv") ]
class DPO_Info
{
[
Description("Product version"),
key
]
string    ProductVersion;

/* [
Description("Features enabled")
]
int
*/

[
Description("Date/Time of last check for system updates")
]
string    LastCheckForUpdateTime;

[
Description("Date/Time of last system update")
]
string    LastSystemUpdateTime;

[
Description("Date/Time of last check for updated profiles")
]
string    LastCheckForProfiles;
};

/***************************************************************
*    DPO_TriggeredProfiles
***************************************************************/
Description("DPO Profiles that have triggered"),
Dynamic,Provider("DPOProv") ]
class DPO_TriggeredProfiles
{

[
Description("Unique ID of profile"),
Key
]
string    ProfileGUID;

[
Description("Name of profile")
]
string    ProfileName;

[
Description("Unique ID of policy that triggered"),
Key
]
string    PolicyGUID;

[
Description("Name of policy that triggered")
]
string    PolicyName;

[
Description("Date/Time of trigger"), key
]
string    TriggeredAt;

};

/***************************************************************
*    DPO_Profiles
***************************************************************/
 [Description("DPO Profiles"),
Dynamic,Provider("DPOProv") ]
class DPO_Profiles
{
[
Description("Unique ID"),
Key
]
string    ProfileGUID;

[
Description("Name")
]
string    ProfileName;

[
Description("Active")
]
string    Active;
};

/***************************************************************
*    DPO_SmartAlerts
***************************************************************/
[Description("DPO Smart Alerts"),
Dynamic,Provider("DPOProv") ]
class DPO_SmartAlerts
{
[
Description("Unique ID of alert"),
Key
]
string    AlertGUID;

[
Description("Alert Message")
]
string    AlertMessage;

[
Description("Alert Description"),
]
string    AlertDescr;

[
Description("Guidance"),
]
string    AlertGuidance;

[
Description("Local date/time of alert"),
]
string    AlertGeneratedAt;

};
/**************************************************************
*    Creat an instance of the provider
// Setting the HostingModel to Decoupled:Com registers the provider as a decoupled com
provider,
// lowers RPC_C_IMP_LEVEL_IMPERSONATE and RPC_C_IMP_LEVEL_DELEGATE impersonation levels to
// RPC_C_IMP_LEVEL_IDENTIFY before calling into provider:

// Setting the HostingModel to Decoupled:Com:FoldIdentity(FALSE} allows original client
// impersonation level through to provider.
// This lets a decoupled provider impersonate the client and hence
// act in the role of that client. This poses a potential security risk for the client
// if the decoupled provider security identity has less rights than the original cliient.
// Use a strong security descriptor when using this option:

**************************************************************/

instance of     Win32Provider as $P
{
Clsid = "{C4ABD5F1-1260-4192-BF0B-11909C172043}";

Name = "DPOProv";
HostingModel = "NetworkServiceHost";

};

instance of    InstanceProviderRegistration
{
Provider = $P;
SupportsGet = TRUE;
SupportsPut = FALSE;
SupportsDelete = FALSE;
SupportsEnumeration = TRUE;

// we want WMI to do query parsing QuerySupportLevels = NULL;
};

instance of    MethodProviderRegistration
{
Provider = $P;
};
```