

Dell Precision Optimizer

Guía del administrador



Notas, precauciones y advertencias

 **NOTA:** Una NOTA señala información importante que lo ayuda a hacer un mejor uso de su producto.

 **PRECAUCIÓN:** Una PRECAUCIÓN indica un potencial daño al hardware o pérdida de datos y le informa cómo evitar el problema.

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Introducción

En este documento se describen herramientas, consejos y recomendaciones para los administradores de TI para administrar Dell Precision Optimizer de forma remota.

Componentes de Dell Precision Optimizer

Los cuatro componentes principales de Dell Precision Optimizer son los siguientes:

- Rendimiento
- Motor de seguimiento y análisis (TA)
- Mantenimiento del sistema (SM)
- CLI del administrador de Dell Precision Optimizer (dpoCmd.exe)

Cada uno de estos componentes se implementa como un servicio de Windows que también actúa como un servidor COM. El paquete del instalador de Dell Precision Optimizer instala el servicio junto con el DLL de asistencia, los componentes de la interfaz de usuario (IU) y los controladores de dispositivos del modo kernel de Dell Precision Optimizer, entre otros, en la carpeta de instalación POA. Además, permite instalar e iniciar una aplicación de la barra de tareas siempre que el usuario inicie sesión. Esta aplicación notifica al usuario sobre varios eventos POA, como cuando finaliza una actualización o es necesario reiniciar.

El paquete del instalador de Dell Precision Optimizer también es responsable de crear una clave de registro de software para los módulos de Dell Precision Optimizer. A continuación, se indican las rutas predeterminadas:

Tabla 1. Rutas predeterminadas

Nombre	Rutas
Carpeta de instalación:	C:\Program Files\Dell\PPO
Ruta de acceso del registro:	HKLM\Software\Dell\PPO
Datos del tiempo de ejecución:	C:\ProgramData\Dell\PPO

El paquete de instalación copia algunos perfiles y políticas predeterminados en la carpeta de instalación.

Desinstalación de Dell Precision Optimizer

Dell Precision Optimizer se puede desinstalar del sistema a través de los pasos que se presentan a continuación:

El comando de desinstalación se puede obtener a partir del registro mediante la lectura del valor de la cadena `UninstallString` en la siguiente ubicación:

Tabla 2. Desinstalación de la ubicación del comando

Nombres	Ubicación del comando
Para sistemas de 64 bits	HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Microsoft\Windows\CurrentVersion\Uninstall\{D66A3355-FEA4-4F60-8BAF-D6CBEDB396D8}
Para sistemas de 32 bits	HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\{D66A3355-FEA4-4F60-8BAF-D6CBEDB396D8}

Se muestra un valor de ejemplo para `UninstallString`:

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

 **NOTA:** En este comando, el valor **-l0x0007** puede ser diferente para el sistema.

En un símbolo del sistema (ejecutar como administrador), si ejecuta el comando que se mostró anteriormente, se iniciará el proceso de desinstalación de la aplicación Dell Precision Optimizer. El siguiente comando se puede modificar para ejecutar la desinstalación de manera silenciosa mediante la incorporación del siguiente comando:

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

Si el archivo de respuesta silenciosa (archivo .iss) se encuentra en la carpeta **C:\temp** y su nombre es **uninst.iss**, el siguiente comando ejecutará la desinstalación de manera silenciosa:

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

Rendimiento

El subsistema de rendimiento consta de los siguientes módulos:

- Motor de procesamiento de políticas (PPE)
- Herramienta de actualización de perfiles (profUpd.exe)
- Herramienta de opciones de actualización (upgradeOpt.exe)

Temas:

- [Motor de procesamiento de políticas](#)
- [Herramienta de actualización de perfiles](#)
- [Opciones de actualización herramienta](#)

Motor de procesamiento de políticas

El motor de procesamiento de políticas, o PPE, se implementa como un servicio de Windows que inicia la ejecución tan pronto como arranca el equipo, independientemente de si el usuario ha iniciado sesión.

En este módulo se incluye una interfaz que se puede utilizar para realizar las siguientes tareas:

- Activar o desactivar perfiles
- Enumerar parámetros de entrada y salida para permitir que se creen políticas nuevas
- Guardar y recuperar perfiles y políticas para máquinas, usuarios o aplicaciones de terceros de Dell Precision Optimizer

Herramienta de actualización de perfiles

En la IU de Dell Precision Optimizer se usa esta herramienta de línea de comandos (profUpd.exe) para verificar y actualizar los perfiles del servidor Dell. Se debe usar un archivo de configuración local para informar a Dell Precision Optimizer la dirección del servidor Dell y qué protocolo utilizar, por ejemplo, HTTP, HTTPS o FTP.

① NOTA: Todos los perfiles y las políticas del servidor se firman de forma digital y se guardan cifrados mediante el algoritmo AES-256.

Opciones de actualización herramienta

La IU de Dell Precision Optimizer usa esta herramienta de línea de comandos (upgradeOpt.exe) para iniciar la URL del sitio de soporte de Dell en el explorador predeterminado. En el sitio se muestra la lista de opciones de actualización de hardware disponibles para el sistema específico.

Realizar seguimiento y Analizar

El subsistema de análisis permite generar los tipos de informes que se indican a continuación:

- Informes de análisis del sistema
- Informes de análisis de la carga de trabajo
- Informes de inteligencia de la CPU
- Informes de inteligencia de la GPU
- Informes de diagnóstico del sistema
- Notificaciones de rendimiento

Los **informes de análisis del sistema** proporcionan los datos que ha recopilado la aplicación Dell Data Vault (DDV) en formato .XML.

La función de **Análisis de carga de trabajo** permite al usuario analizar su carga de trabajo.

Temas:

- [Informes de análisis del sistema](#)
- [Análisis de la carga de trabajo](#)
- [Informes de inteligencia de la CPU](#)
- [Informes de inteligencia de la GPU](#)
- [Informe de los diagnósticos del sistema](#)
- [Notificaciones de rendimiento](#)
- [Opciones de actualización](#)

Informes de análisis del sistema

El usuario puede habilitar o deshabilitar estos informes mediante la interfaz COM de Dell Precision Optimizer. Esta interfaz permite al usuario configurar la frecuencia con la que se generan los informes de análisis del sistema para enumerar y leer los informes existentes. El archivo .XML del informe de análisis del sistema contiene los datos del informe divididos en elementos <ddv_group> y <ddv_subgroup>. Todos los datos relacionados con la misma categoría están en el mismo grupo.

Todos los datos relacionados con el termistor 0 estarán en el grupo `Termistor 0` de DDV_GROUP.

Configuración de informes

Habilitación del análisis del sistema

Tabla 3. Habilitación del análisis del sistema

Detalle de los atributos	Descripción
Tipo:	Habilitar o deshabilitar la casilla de verificación
Predeterminado:	Disabled (Desactivado)

Detalle de los atributos	Descripción
Descripción:	Esta configuración permite al subsistema DDV iniciar la recopilación de datos. Cuando está desactivada, DDV no está activa. Después de habilitar esta opción, los informes de DDV se generan periódicamente hasta que la configuración se desactiva de forma manual. Los cambios que se realicen en esta selección de categorías pueden hacer que se descarten todos los datos de DDV existentes que estén sin procesar.

Generar informe

Tabla 4. Generar informe

Detalle de los atributos	Descripción
Tipo:	Seleccione una de las siguientes opciones: • Después de 24 horas (diariamente) • Después de 12 horas • Después de 8 horas • Después de 6 horas • Después de 4 horas
Predeterminado:	Diariamente
Descripción:	Una vez que se haya habilitado esta opción, DDV recopila los datos sin procesar y genera informes de forma periódica. Esta configuración controla la frecuencia con la que el DDV procesa los datos sin procesar y genera con ellos un informe nuevo. Los cambios que se realicen en esta selección de categorías pueden hacer que se descarten todos los datos de DDV existentes que estén sin procesar.

Habilitación de la recopilación de datos

Tabla 5. Habilitación de la recopilación de datos

Detalle de los atributos	Descripción
Tipo:	Se puede seleccionar más de una categoría de las siguientes opciones: • Batería • Térmico • Ventilador • Procesador • Memoria • Almacenamiento • Red
Predeterminado:	Todas las casillas de verificación están activadas
Descripción:	Esta configuración le permite al usuario controlar las categorías de datos que se mostrarán en el informe.

Análisis de la carga de trabajo

Dell Precision Optimizer 5.0 y versiones posteriores permiten que el usuario clasifique sus cargas de trabajo y determine los usos de sus recursos. Cuando el usuario inicia el análisis, Dell Precision Optimizer recopila los parámetros de uso de recursos del sistema, como CPU, memoria, discos y GPU.

Informes de inteligencia de la CPU

Dell Precision Optimizer 5.0 y versiones posteriores permiten que el usuario vea información mejorada de la CPU Intel, que incluye información del procesador y datos en vivo de cada procesador lógico. En la IU de Dell Precision Optimizer se muestran datos en forma de gráficos lineales.

La IU usa la interfaz COM para obtener la siguiente información acerca del procesador:

- Nombre de la CPU
- Número de ranuras
- Número de núcleos físicos
- Estado de Hyper-Threading (habilitado/deshabilitado)
- Tamaño de la caché de L1 (KB)
- Tamaño de la caché de L2 (KB)
- Tamaño de la caché de L3 (KB)
- Uso de la CPU por procesador lógico
- Frecuencia relativa activa de la CPU por procesador lógico (para determinar la residencia del turbo)
- Longitud de la cola del procesador del sistema
- Número de subprocesos del sistema

Informes de inteligencia de la GPU

Solo en el caso de los adaptadores de GPU NVIDIA y AMD compatibles, Dell Precision Optimizer 5.0 y versiones posteriores permiten que el usuario vea GPU mejorados. Esto incluye un adaptador de GPU e información de software, y datos en vivo para cada GPU. En la IU de Dell Precision Optimizer se muestran datos en forma de gráficos lineales.

La IU utilizará la interfaz de Dell Precision Optimizer para obtener la siguiente información acerca de la GPU:

- Número de GPU
- Versión del controlador de GPU
- Nombre del adaptador de GPU (solo para la GPU 0 activa)
- Versión del BIOS de vídeo (solo para la GPU 0 activa)
- Tamaño del búfer de fotogramas (solo para la GPU 0 activa)

Los datos en vivo de GPU están disponibles solo con los adaptadores de Nvidia y AMD cuando el usuario ha iniciado sesión.

ⓘ | NOTA: En algunos sistemas móviles con adaptadores de GPU AMD, es posible que los datos en vivo válidos solo se muestren cuando haya una carga activa en ejecución en el adaptador de GPU AMD.

Se recopilará la siguiente información activa para cada GPU y se visualizará en forma de gráficos de líneas.

- Utilización de la GPU
- Temperatura de la GPU
- Velocidad del ventilador #0 de la GPU (%)
- Uso de la memoria de vídeo

Informe de los diagnósticos del sistema

Dell Precision Optimizer 5.0 y versiones posteriores permiten que el usuario ejecute informes de diagnóstico del sistema. Estos son informes estándar que proporciona Microsoft; ejemplos de ellos son los informes del sistema, informes sobre la batería o informes de fiabilidad. El usuario debe poder generar un informe nuevo o ver el último informe generado. Solo pueden usar esta opción los usuarios con privilegios de administrador.

Esta función actúa como un acceso directo a las herramientas existentes de Microsoft. Los informes siguientes están disponibles desde este panel:

- El informe de diagnóstico del sistema contiene:
 - Los resultados del diagnóstico con los errores y avisos en el sistema
 - Una descripción general del uso de recursos
- El informe de confiabilidad del sistema contiene lo siguiente:
 - Una lista de los errores de aplicaciones, Windows y otros de las últimas semanas.
 - Los eventos y avisos informativos durante ese periodo.
 - El índice de estabilidad de Windows.
- Informe de batería (esta función solo está disponible en Windows 8 y versiones posteriores):
 - Los detalles de la batería instalada.
 - El historial y el uso reciente
 - Las estimaciones de duración y de capacidad de la batería

Notificaciones de rendimiento

Dell Precision Optimizer 4.0 y versiones posteriores permiten que el usuario habilite notificaciones de rendimiento. Le permite obtener notificaciones de cualquiera de los casos que se indican a continuación:

- Uso excesivo de la CPU
- Uso excesivo de la memoria
- Operaciones excesivas de lectura o escritura en el disco

Opciones de actualización

La IU de Dell Precision Optimizer proporciona un nuevo enlace al sitio web de soporte de Dell, en el que un usuario puede ver y solicitar piezas opcionales o de actualización para una plataforma específica. La aplicación debe utilizar la etiqueta de servicio del sistema para determinar cuáles son las actualizaciones disponibles. Esta función se implementa de forma interna con la herramienta `upgratdeOpt.exe`.

Mantenimiento del sistema

El mantenimiento del sistema o SM de Dell Precision Optimizer permite filtrar actualizaciones que se ven o se aplican según los siguientes criterios derivados de Dell Command | Update:

- Necesidad crítica (crítico, recomendado u opcional)
- Tipo (controladores de hardware, aplicaciones, BIOS y firmware)
- Categoría (audio, conjunto de chips, entrada, red o Bluetooth, almacenamiento, video y otros)

Comentarios de los usuarios

La IU de Dell Precision Optimizer permite que el usuario envíe comentarios a Dell. La IU de Dell Precision Optimizer cuenta con un enlace o un botón que puede utilizar el usuario para proporcionar sus comentarios. La IU usa una URL en el explorador que permitirá al usuario usar un formulario estándar de Dell para proporcionar comentarios sobre Dell Precision Optimizer.

Mejorar Dell Precision Optimizer

El programa para la mejora de la experiencia del usuario de Dell Precision Optimizer permite a los clientes de Dell participar en el desarrollo de versiones futuras de Dell Precision Optimizer. Si comparte información con Dell con respecto a cómo utiliza Dell Precision Optimizer, puede contribuir con avances en futuras versiones del producto.

El Programa para la mejora de la experiencia del usuario de Dell Precision Optimizer cumple con todas las disposiciones de la política de privacidad de Dell. Los datos recopilados se limitan al uso de Dell Precision Optimizer y la etiqueta de servicio de la estación de trabajo. No se recopilará ningún dato personal. Puede unirse o abandonar el programa en cualquier momento.

Esta función está deshabilitada de manera predeterminada.

Herramientas empresariales

Proveedores de WMI

Dell Precision Optimizer y versiones posteriores incluyen un proveedor WMI para conceder acceso a la siguiente información. Consulte el Apéndice A para obtener descripciones de MOF. Los siguientes dos archivos son parte del paquete de Dell Precision Optimizer:

- Proveedor de WMI de Dell Precision Optimizer: dpoProv.mof
- Archivo de definiciones MOF de Dell Precision Optimizer SMS: sms_def_dpo3.mof
- Informes de DDV
- Versión del producto
- Última comprobación de la fecha de actualización
- Hora de la última actualización del sistema
- Última comprobación de los perfiles
- Historial del desencadenador de perfiles o políticas
- Lista de perfiles activos
- Notificaciones de rendimiento

DPOCMD.EXE

Dell Precision Optimizer 5.0 y versiones posteriores proporcionan la herramienta CLI, dpoCmd.exe, para permitir que el administrador de TI cuente con las siguientes capacidades:

- Agregar un perfil o una política nuevos.
- Indicar todos los perfiles
- Habilitar o deshabilitar un perfil.
- Programar informes de análisis del sistema con filtros específicos
- Ejecutar la actualización del sistema de Dell Precision Optimizer con filtros.
- Comprobar las actualizaciones del sistema de Dell Precision Optimizer con filtros.
- Exportar un perfil creado por el usuario
- Importar un perfil creado por el usuario
- Actualizar a una versión premium
- Habilitar o deshabilitar las funciones de la UI con las siguientes opciones de CLI, que también se controlan mediante los nuevos interruptores de la línea de comandos del instalador de Dell Precision Optimizer:

Tabla 6. Interruptores de la línea de comandos

Control	Definición	Predeterminado	Interruptor de la línea de comandos
ProfileControl	Si el valor es 0, no permite que el usuario habilite ni deshabilite perfiles	1	PROFCTRL
ProfileUpdate	Si el valor es 0, no permite que el usuario busque nuevos perfiles.	1	PROFUPD

Control	Definición	Predeterminado	Interruptor de la línea de comandos
SystemUpdate	Si el valor es 0, no permite que el usuario busque actualizaciones del sistema.	1	SYSUPD
DDVControl	Si el valor es 0, no permite que el usuario habilite ni deshabilite informes de análisis del sistema	1	DDVCTRL
UserFeedback	Si el valor es 0, no permite que el usuario proporcione retroalimentación sobre Dell Precision Optimizer.	1	USRFB
UpgradeOptions	Si el valor es 0, no permite que el usuario compruebe las opciones de actualización.	1	UPGOPT
WorkloadAnalysis	Si el valor es 0, no permite que el usuario ejecute el análisis de carga de trabajo.	1	WKLANL
GfxPlugins	Si el valor es 0, no muestra las opciones de GfxPlugin al usuario.	1	GFXPLUGINS
ImproveDPO	Si el valor es 0, no permite mostrar la configuración de Dell Precision Optimizer al usuario.	1	IMPROVEDPO
ISVCertDrvr	Si el valor es 0, no permite que el usuario vea ni instale controladores gráficos con certificación ISV.	1	ISVCERTGFX
SmartAlerts	Si el valor es 0, no permite que el usuario habilite ni deshabilite alertas inteligentes	1	SMARTALERT

Uso de CLI:

```
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>] ...
```

- donde <reportDuration> puede ser 0, 4, 6, 8 o 12
 - 0 significa un informe diario
 - 4 significa un informe cada 4 horas
 - 6 significa un informe cada 6 horas, etc.
- -r <ddvSubSystem> eliminará ese subsistema y los datos no aparecerán en los informes de DDV que se generen. <ddvSubSystem> puede ser una de las siguientes opciones:
 - Batería
 - Térmico
 - Ventilador
 - Procesador
 - Memoria
 - Red
 - Almacenamiento

```
dpoCmd.exe -cancelReports
```

dpoCmd.exe -enableFeatures <feature> [<feature> ...], donde <feature> puede ser una de las siguientes opciones:

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

dpoCmd.exe -disableFeatures <feature> [<feature> ...], donde <feature> puede ser una de las siguientes opciones:

- 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>
```

donde -criticality: puede ser una o varias de las siguientes opciones:

- C => crítico
- R => recomendado
- O => opcional

donde -filter: puede ser una o varias de las siguientes opciones:

- B => BIOS
- D => controladores
- A => aplicaciones
- F => firmware

donde -device: puede ser una o varias de las siguientes opciones:

- A => audio
- C => conjunto de chips
- M => ratón/teclado
- S => almacenamiento
- N => red/Bluetooth
- V => vídeo

```
dpoCmd.exe -exportProfile <profile_guid or unique_profile_name> <dpzFileName>  
dpoCmd.exe -importProfile <dpzFileName>  
dpoCmd.exe -upgradeToPremium <licenseKey>
```

donde `licenseKey` es una clave alfanumérica y no un archivo que contiene la clave.

Configuración de los interruptores de la línea de comandos

El instalador de Dell Precision Optimizer 5.0 proporciona switches de línea de comandos para permitir que el administrador de TI controle ciertos comportamientos del paquete del cliente. Esta lista se menciona en la sección 8.2.

Tabla 7. Configuración de los interruptores de la línea de comandos

Interruptores de la línea de comandos	Descripción
Setup.exe PROFUPD=0 WKLANL=0	Para instalar Dell Precision Optimizer y no permitir que el usuario compruebe los nuevos perfiles ni ejecute el análisis de carga de trabajo.

Además, las nuevas opciones de `GUI=0` permiten al administrador de TI instalar el cliente Dell Precision Optimizer sin ningún componente de la IU; por ejemplo, el modo sin periféricos. El usuario no puede controlar el software. El administrador de TI puede usar la nueva herramienta de CLI para habilitar o deshabilitar otras funciones de tiempo de ejecución.

SCCM

Este es uno de los métodos que utilizan los administradores de TI actualmente para administrar sus sistemas y aplicaciones de software de forma centralizada. En esta sección, se entregan ejemplos sobre cómo los administradores de TI pueden utilizar las herramientas de SCCM para administrar la aplicación Dell Precision Optimizer.

NOTA: Existen otros métodos y herramientas aparte de SCCM en el sector. Use los ejemplos que se indican para administrar Dell Precision Optimizer en esos entornos.

Instrucciones para crear el paquete de programa de aplicación de Dell Precision Optimizer

Siga estos pasos para crear un paquete de Dell Precision Optimizer que se pueda implementar en un sistema cliente en un entorno empresarial. Nota: Los pasos pueden variar en función de la versión de SCCM que use.

- 1 Descargue los archivos de Dell Precision Optimizer necesarios para la instalación.
- 2 En la consola **Configuration Manager**:
 - Abra la página de la **Biblioteca de software**.
 - Haga clic en la carpeta **Descripción general**.
 - Haga clic en **Administración de aplicaciones**.
 - Haga clic con el botón derecho del mouse en **Aplicaciones** y seleccione **Crear aplicación**.
- 3 En el asistente **Crear aplicación**:
 - Seleccione **Manualmente** y especifique la información de la aplicación.
 - Nombre la aplicación, que es **Dell Precision Optimizer 5.00.02** y haga clic en **Siguiente**.
 - En el **catálogo de aplicaciones**, haga clic en **Siguiente**.
 - En la página **Tipos de implementación**, haga clic en **Agregar**.
 - En el asistente **Crear tipo de implementación**, seleccione Tipo: instalador de scripts y, a continuación, haga clic en **Siguiente**.
 - Asigne un nombre al tipo de implementación y haga clic en **Siguiente**.
 - Escriba la ubicación de los archivos de Dell Precision Optimizer en la ubicación del contenido.
 - En Programa de instalación, escriba lo siguiente: `"PoaInstaller.exe" /s`

- En la pestaña **Métodos de detección**, haga clic en **Agregar** cláusula.
- La regla de detección es la siguiente:

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

- Haga clic en **Aceptar** para cerrar la ventana **Regla de detección** y, en el asistente **Crear tipo de implementación**, haga clic en **Siguiente**.
 - Especifique las experiencias de usuario de la forma siguiente:
 - Comportamiento de la instalación: instalar para el sistema
 - Requisito de inicio de sesión: si un usuario ha iniciado sesión o no
 - Visibilidad del programa de instalación: normal
 - En la pestaña **Requisitos**, haga clic en **Siguiente**.
 - En la pestaña **Dependencias**, haga clic en **Siguiente**.
 - Haga clic en **Siguiente** en **Resumen** y compruebe que el **Tipo de implementación** se creó correctamente. Cierre el asistente **Crear tipo de implementación**.
- 4 En el asistente **Crear aplicación**, haga clic en **Siguiente** en la pestaña **Tipos de implementación**. A continuación, en la pestaña **Resumen**, haga clic en **Siguiente** y confirme que la aplicación se haya creado correctamente.

Instrucciones para la implementación de la aplicación

Una vez que se haya creado el paquete, utilice las siguientes instrucciones para implementarlo en los clientes seleccionados:

- 1 Haga clic con el botón derecho para implementarlo y seleccione **Implementar**.
- 2 Seleccione la colección de dispositivos en la cual desea instalar en Dell Precision Optimizer.
- 3 Asegúrese de que la opción **Distribuir el contenido de las dependencias automáticamente** esté marcada y haga clic en **Siguiente**.
- 4 En la pestaña **Contenido**, haga clic en **Agregar** para seleccionar el punto de distribución.
- 5 En la pestaña **Configuración de la implementación**, debe tener la siguiente configuración:
 - Acción: instalar
 - Objetivo: Obligatorio
- 6 En la pestaña **Programación**, haga clic en **Siguiente**.
- 7 En la pestaña **Experiencia del usuario**, seleccione Notificaciones del usuario: mostrar en el centro de software, y solo mostrar notificaciones para los reinicios de la computadora.
- 8 Haga clic en **Siguiente** en la pestaña **Alertas**, haga clic en **Siguiente** en la pestaña **Resumen**, y verifique que finalice la implementación.

Verificación de la implementación correcta en los sistemas cliente

Para verificar la implementación correcta en los sistemas cliente:

- 1 Abra **Centro de software** en el sistema cliente y compruebe si Dell Precision Optimizer está instalado.

 **NOTA:** La instalación puede tardar unos minutos después de implementar la aplicación
- 2 Vaya a C:\Windows\CCM\Logs y compruebe **AppDiscovery.Log**, **AppIntent.log** y **AppEnforce.log** para fines de solución de problemas.

Cambio del comportamiento del cliente de Dell Precision Optimizer mediante DPOCMD.EXE

A continuación, se presentan los pasos que puede seguir para ejecutar CLI de Dell Precision Optimizer (dpoCmd.exe) en un sistema de destino y cambiar el comportamiento del software de Dell Precision Optimizer en ese sistema. En el siguiente ejemplo se muestra el uso de dpoCmd.exe para habilitar un perfil de Dell Precision Optimizer (After Effects de Adobe).

Creación de un paquete de software

Para crear un paquete de software:

- 1 En la consola **Configuration Manager**:
 - a Abra la página de la **biblioteca de software**.
 - b Haga clic en la pestaña **Descripción general**.
 - c Abra la pestaña **Administración de aplicaciones**.
 - d Haga clic con el botón derecho en **Paquetes** y seleccione **Crear paquete nuevo**.
- 2 En el asistente **Crear paquete y programa**:
 - a Defina el nombre: habilitar un perfil de Dell Precision Optimizer.
 - b Especifique la información del paquete y haga clic en **Siguiente**.
- 3 En la pestaña **Tipo de programa**, seleccione **Programa estándar**.
- 4 En la pestaña **Programa estándar**:
 - a Nombre: habilitar Adobe After Effects
 - b Línea de comandos: dpoCmd.exe –enableProfile {2F066600-FA52-4F57-890D-2621D39B0BE9}}
 - c Carpeta de inicio: C:\program files\dell\ppo
 - d Ejecutar: normal
 - e El programa puede ejecutarse: si el usuario inició sesión o no
 - f Modo de ejecución: ejecutar con derechos de administrador
 - g Modo de unidad: funciona con nombre de UNC
- 5 En la pestaña **Requisitos**, seleccione **Este programa se puede ejecutar en cualquier plataforma**.
- 6 Haga clic en **Siguiente**, revise el resumen del paquete y verifique que el paquete se haya creado correctamente.

REALICE la implementación de un paquete de software Habilitar un perfil de Dell Precision Optimizer

- 1 En la consola **Configuration Manager**:
 - a Abra la página de la **biblioteca de software**.
 - b Haga clic en la pestaña **Descripción general**.
 - c Abra la pestaña **Administración de aplicaciones**.
 - d Haga clic en **Paquetes**.
- 2 Haga clic con el botón derecho en el paquete de software **Habilitar perfil DPO** y seleccione **Implementar**.
- 3 En el asistente **Implementar software**:
 - a En la pestaña **General**, haga clic en navegar para seleccionar la colección de dispositivos y haga clic en **Siguiente**.
 - b En la pestaña **Contenido**, haga clic en **Agregar** para agregar un punto de distribución y, a continuación, haga clic en **Siguiente**.
 - c En la pestaña Configuración de la implementación, debe tener la configuración siguiente:
 - Acción: instalar
 - Objetivo: Obligatorio

- Marque la casilla de los paquetes **Enviar señales**.
- d En la pestaña **Programación**, seleccione la hora de la implementación y asegúrese de que la opción **Volver a ejecutar el comportamiento** esté en **Siempre volver a ejecutar el programa**. Para implementarlo, haga clic en **Nuevo** y seleccione **Asignar inmediatamente tras este evento: lo antes posible**.
- e En la pestaña **Experiencia del usuario**, asegúrese de que se hayan marcado las siguientes casillas de verificación
 - 1 Instalación del software
 - 2 Reinicio del sistema (si es necesario para completar la instalación)
 - 3 Confirmación de cambios dentro de la fecha límite o en una ventana de mantenimiento (reinicio necesario).
- f En la pestaña **Puntos de distribución**:
 - 1 Opciones de implementación: descargar contenido del punto de distribución y ejecutarlo de forma local.
 - 2 Asegúrese de que se haya marcado la opción **Permitir a los clientes compartir contenido con otros clientes en la misma subred**.
-
- g Haga clic en **Siguiente** y verifique que la implementación se haya completado correctamente.

Informes SSRS

Como administrador del sistema, puede crear varios informes según los datos recopilados de los proveedores de WMI de Dell Precision Optimizer. Si lo desea, puede incluir `sms_def_dpo3.mof` para ampliar las definiciones de la base de datos y extraer los datos correspondientes de los sistemas de cliente de Dell Precision Optimizer. Puede seleccionar algunos o todos los elementos de datos que desee revisar. El valor predeterminado está establecido para seleccionar todos los elementos de datos de Dell Precision Optimizer.

Importación del archivo `sms_def_dpo3.mof` para definir las clases de inventario de hardware

- 1 En la consola **Configuration Manager**:
 - a Abra la página **Administración**.
 - b Haga clic en la pestaña **Descripción general**.
 - c Haga clic en la pestaña **Configuración del sitio** y seleccione **Configuración de cliente**.
- 2 Haga clic con el botón derecho en Configuración de cliente existente y seleccione las propiedades o cree una nueva configuración personalizada de cliente.
- 3 En la pestaña **Inventario de hardware**, seleccione **Definir clases**.
- 4 Seleccione **Importar** y vaya a la ubicación del archivo `sms_def_dpo3.mof`.
- 5 Haga clic en **Aceptar** para importar el archivo y cierre la ventana **Clases de inventario de hardware**.

Después de guardar los datos recopilados en la base de datos de SQL, puede crear otro tipo de informes de Dell Precision Optimizer. Con el software Dell Precision Optimizer se proporcionan varias muestras (*.RDL). Puede importar estos archivos RDL, conectarlos a la base de datos de SQL y ejecutar los informes.

Para importar un archivo .RDL

- 1 Abra SQL Server Data Tools.
- 2 En el explorador de soluciones, haga clic con el botón derecho en la carpeta a la que desea agregar el archivo .RDL.
 - a Seleccione **Agregar un elemento existente**.
 - b Seleccione el archivo .RDL.
- 3 Una vez que se haya importado el archivo, ábralo y seleccione la pestaña **Diseño**.

Para asegurarse de que el archivo .RDL usa la fuente de datos correcta

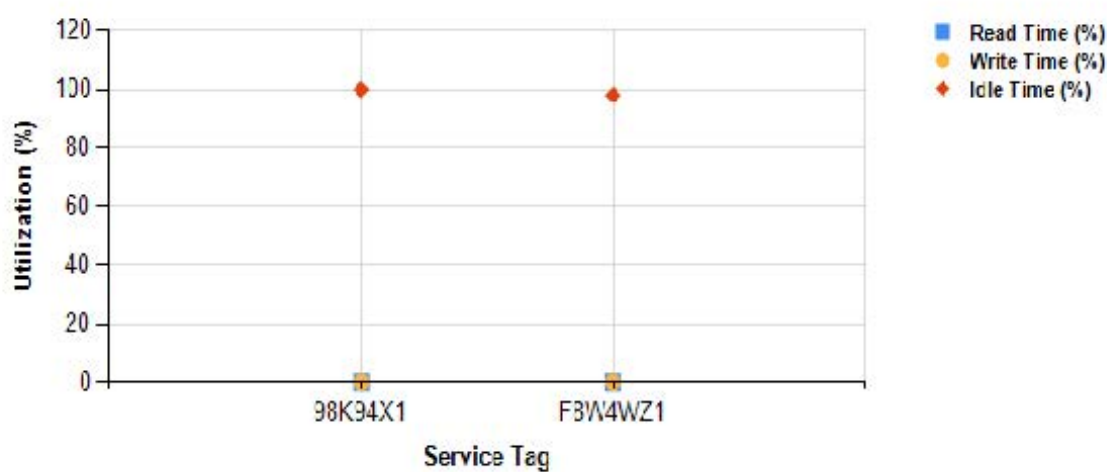
- 1 En el panel **Datos de informe**, hacer clic en **Conjuntos de datos** y haga clic con el botón derecho en uno de los conjuntos de datos y seleccione **Propiedades del conjunto de datos**.
- 2 En la ventana **Propiedades del conjunto de datos**:
 - a la opción **Usar un conjunto de datos integrado en mi informe** está seleccionada.
 - b En origen de **Datos**, haga clic en **Nuevo...**
 - c En la ventana **Propiedades del origen de datos**, marque **Usar referencia del origen de datos compartida** y seleccione el origen de datos correcto.
 - d Haga clic en **Ok**.
- 3 Repita los pasos 1 y 2 en todos los conjuntos de datos de la carpeta **Conjuntos de datos**.

Información del disco en varios sistemas

Este informe muestra información del disco de varios sistemas que utilizan el último informe de análisis del sistema.

Tabla 8. Información del disco en varios sistemas

Etiqueta de servicio	Lectura de bytes (MB)	Escritura de bytes (MB)	Tiempo de lectura (%)	Tiempo de escritura (%)	Tiempo de inactividad (%)
98K94X1	0	0	0	0	100
F8W4WZ1	0	460	0	0	98



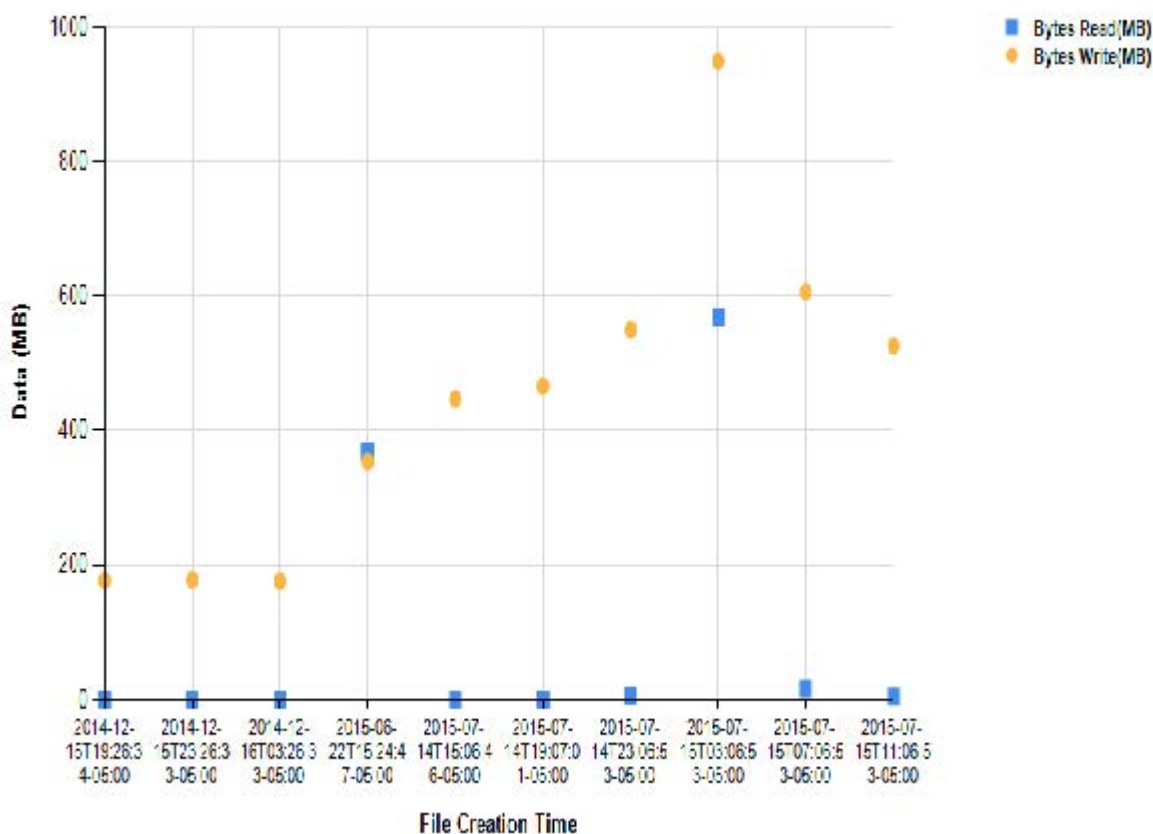
Información del disco para un solo sistema

Este informe muestra información del disco de un único sistema en varios informes.

Tabla 9. Información del disco para un solo sistema

Fecha del informe	Lectura de bytes (MB)	Escritura de bytes (MB)	Tiempo de lectura (%)	Tiempo de escritura (%)	Tiempo de inactividad (%)	Horas de actividad
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
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

Fecha del informe	Lectura de bytes (MB)	Escritura de bytes (MB)	Tiempo de lectura (%)	Tiempo de escritura (%)	Tiempo de inactividad (%)	Horas de actividad
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

Este es uno de los métodos que utilizan los administradores de TI actualmente para administrar sus sistemas y aplicaciones de software de forma centralizada. En esta sección, se entregan ejemplos de cómo los administradores de TI pueden usar el dispositivo de KACE para administrar la aplicación de Dell Precision Optimizer.

NOTA: Los pasos siguientes se han verificado en KACE Appliance 6.4.120756 K1000. Si usa una versión de KACE diferente, es posible que los pasos reales sean ligeramente diferentes.

Instrucciones para la implementación de Dell Precision Optimizer con KACE

Los administradores de TI pueden usar el siguiente procedimiento para implementar la aplicación Dell Precision Optimizer en los sistemas de clientes seleccionados de su dominio.

Creación de un script de instalación

Desde la consola de KACE Appliance:

- 1 Vaya a **Scripting->Scripts->Elegir acción->Nuevo**.
- 2 En la página **Información de scripts**, escriba la siguiente información:
 - **Nombre** -> Instalar DPO
 - **Habilitado** -> Marque la casilla
 - **Tipo** -> K-Script en línea
 - **Descripción** -> Este script instalará el software de cliente DPO
 - **Implementar** -> Ninguno
 - **Sistemas operativos** -> Desmarque **Seleccionar sistemas operativos específicos** y seleccione Microsoft Windows
 - **(Alternativa) Sistemas operativos** -> Seleccionar sistemas operativos específicos de Windows para la implementación
 - **Ejecutar Windows como** -> Sistema local
 - **Notificar** -> Ninguno
 - **Programa** -> Ninguno
 - **Dependencias** -> Agregar todos los archivos de paquetes DPO como dependencias nuevas
 - **Tareas** -> Seleccione Nueva tarea
 - **Verificar** -> Haga clic en **Agregar**, seleccione **Iniciar un programa** e ingrese los datos siguientes:
 - **Directorio** -> \$(KACE_DEPENDENCY_DIR)
 - **Archivo** -> Poalnstaller.exe
 - **Esperar la finalización** -> MARCADO
 - **Visible** -> NO ESTÁ MARCADO
 - **Parámetros** -> LOGFILE=c:\temp\dpo.log /s
 - Guarde los cambios.
 - **Proceso correcto** -> Ninguno
 - **Corrección** -> Ninguno
 - **Corrección con éxito** -> Ninguno
 - **Corrección con errores** -> Ninguno
 - **Tareas** -> Seleccione Nueva tarea
 - **Verificar** -> Haga clic en **Agregar**, seleccione **Verificar un archivo existente** e ingrese los datos siguientes:
 - Directorio: C:\Program Files\Dell\DPO
 - Archivo: dpoCmd.exe
 - Guardar cambios.
 - **Proceso correcto** -> Ninguno
 - **Corrección** -> Ninguno
 - **Corrección con éxito** -> Ninguno
 - **Corrección con errores** -> Ninguno
 - Haga clic en **Guardar**.

Ejecución de un script de instalación en los sistemas seleccionados

Desde la consola de KACE Appliance:

- 1 Haga clic en **Scripting** y, a continuación, seleccione **Ejecutar ahora**.
- 2 Seleccione **Instalar DPO** desde el menú desplegable Scripts.
- 3 En **Etiquetas**, seleccione una etiqueta de dispositivos Windows donde desee implementar Dell Precision Optimizer O seleccione manualmente un conjunto de sistemas.
- 4 Haga clic en **Ejecutar ahora**.
- 5 Haga clic en **Guardar**.

Esto inicia la implementación del software de cliente de Dell Precision Optimizer en los sistemas seleccionados. Estos pasos también se pueden personalizar.

Cambio del comportamiento del cliente de Dell Precision Optimizer mediante DPOCMD.EXE

A continuación, se presentan los pasos que puede seguir para ejecutar CLI de Dell Precision Optimizer (dpoCmd.exe) en un sistema de destino y cambiar el comportamiento del software de Dell Precision Optimizer en ese sistema. En el ejemplo siguiente se muestra el uso de dpoCmd.exe para habilitar un perfil de Dell Precision Optimizer (After Effects de Adobe).

Creación de un script de instalación

Desde la consola de KACE Appliance:

- 1 Vaya a **Scripting**->**Scripts**->**Elegir acción**->**Nuevo**.
- 2 En la página **Información de scripts**, escriba la siguiente información:
 - **Nombre** -> Habilitar perfil DPO de After Effects
 - **Habilitado** -> Marque la casilla
 - **Tipo** -> K-Script en línea
 - **Descripción** -> Este script habilitará el **perfil de After Effects** en el software de cliente de DPO
 - **Implementar** -> Ninguno
 - **Sistemas operativos** -> Desmarque **Seleccionar sistemas operativos específicos** y seleccione Microsoft Windows
 - **(Alternativa) Sistemas operativos** -> Seleccionar sistemas operativos específicos de Windows para la implementación
 - **Ejecutar Windows como** -> Sistema local
 - **Notificar** -> Ninguno
 - **Programa** -> Ninguno
 - **Dependencias** -> Ninguno
 - **Tareas** -> Seleccione Nueva tarea
 - **Verificar** -> Haga clic en **Agregar**, seleccione **Iniciar un programa** e ingrese los datos siguientes:
 - **Directorio** -> C:\Program Files\Dell\PPPO
 - **Archivo** -> dpoCmd.exe
 - **Esperar la finalización** -> MARCADO
 - **Visible** -> NO ESTÁ MARCADO
 - **Parámetros** -> -enableProfile {2F066600-FA52-4F57-890D-2621D39B0BE9}
 - Guarde los cambios.
 - **Proceso correcto** -> Ninguno

- **Corrección** -> Ninguno
- **Corrección con éxito** -> Ninguno
- **Corrección con errores** -> Ninguno
- **Tareas** -> Seleccione Nueva tarea
- **Verificar** -> Haga clic en **Agregar**, seleccione **Verificar un archivo existente** e ingrese los datos siguientes:
 - Directorio -> C:\Program Files\Dell\DPO
 - **Archivo** -> dpoCmd.exe
 - Guardar cambios.
- **Proceso correcto** -> Ninguno
- **Corrección**-> Ninguno
- **Corrección con éxito** -> Ninguno
- **Corrección con errores** -> Ninguno
- Haga clic en **Guardar**.

Ejecución de este script en los sistemas seleccionados

Desde la consola de KACE Appliance:

- 1 Haga clic en **Scripting** y, a continuación, seleccione **Ejecutar ahora**.
- 2 Seleccione **Habilitar perfil DPO de After Effects** desde el menú desplegable Scripts.
- 3 En **Etiquetas**, seleccione una etiqueta de dispositivos Windows donde desee implementar Dell Precision Optimizer O seleccione manualmente un conjunto de sistemas.
- 4 Haga clic en **Ejecutar ahora**.

Informes personalizados

A continuación se muestran algunos ejemplos sobre cómo puede recopilar datos de los clientes de Dell Precision Optimizer mediante clases WMI y crear informes personalizados. Dell Precision Optimizer proporciona un gran conjunto de clases WMI para permitir que un administrador de TI cree una gran variedad de informes. En los siguientes pasos se indica cómo crear un informe de Dell Precision Optimizer. Un administrador de TI puede personalizar qué datos se deben recopilar y conocer cómo presentar esos datos.

Creación de reglas de inventario personalizadas

Desde la consola de KACE Appliance:

- 1 Haga clic en **Inventario** y, a continuación, seleccione **Software**.
- 2 Seleccione **Acción** y seleccione **Nuevo**.
- 3 En la página **Detalles de software**, ingrese la siguiente información
 - **Nombre** -> Inventario de ejemplo de DPO
 - **Versión** -> v1
 - **Editor** -> Dell
 - **Sistemas operativos compatibles** -> Seleccionar sistemas operativos
 - **Regla de inventario personalizada** -> ShellCommandTextReturn(wmic /namespace:\\root\\cimv2\\DPO Path DPO_Profiles get / ALL)
 - Haga clic en **Guardar**.
- 4 Haga clic en el nuevo registro de inventario personalizado y pase el cursor sobre el registro recién creado. Anote el identificador (ID#) que aparece al final de la dirección URL. La URL con el ID# aparece en la esquina inferior izquierda de la página. La necesitará más tarde para crear el informe.

Forzado de la recopilación de inventario

Desde la consola de KACE Appliance:

- 1 Haga clic en **Inventario** y seleccione **Dispositivos**.
- 2 Seleccione los dispositivos en los que está instalado Dell Precision Optimizer (puede usar una etiqueta inteligente para este fin).
- 3 Seleccione **Acción** y seleccione **Forzar inventario**.
- 4 Una vez que se haya completado el ciclo de inventario, vaya a uno de los dispositivos seleccionados en línea.
- 5 En la página **Detalles del dispositivo**, haga clic en **Software** y expanda **Campos de inventario personalizados**. Se mostrará una lista de perfiles y sus estados actuales.

NOTA: Ahora que ajustó la Configuración de scripts e Inventario personalizado y completó un ciclo de inventario personalizado en todos los sistemas deseados, es hora de usar las capacidades de generación de informes de K1000. Aunque puede extraer la información de Dell Precision Optimizer de K1000 mediante un informe basado en el asistente, usaremos un informe de SQL personalizado para procesar y filtrar nuestra información en un informe útil.

Crear informe

Desde la consola de KACE Appliance:

- 1 Haga clic en **Creación de informes** y, a continuación, seleccione **Informes**.
- 2 Seleccione **Acción** y luego **Nuevo (SQL)**.
- 3 En la página **Detalles del informe**, escriba la siguiente información:
 - Título -> Informe de perfil de Dell Precision Optimizer de muestra
 - Descripción -> Es un informe de Dell Precision Optimizer de muestra...
 - Categoría <cualquiera> o Nueva categoría -> Informes DPO
 - 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
```

Sustituya XXXX por el ID# de su inventario personalizado que recopiló anteriormente cuando se creó la regla de inventario personalizada.

- 4 Haga clic en **Guardar**.

Ejecución de informes

Desde la consola de KACE Appliance:

- 1 Haga clic en **Creación de informes** y, a continuación, seleccione **Informes**.
- 2 Busque **DPO** para ver los informes.
- 3 Seleccione el informe correspondiente, por ejemplo, DPO Sample Profile Report, y seleccione el formato de informe que desee, por ejemplo, HTML.

APÉNDICE A: códigos de salida de dpoCmd.exe

```
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;
```

APÉNDICE B: archivos de definición de la clase WMI

```

/*****
* 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;

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[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 controller 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;

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[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 consumption 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%.")]

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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("Percentage 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;

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[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("Percentage 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.")]

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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."),

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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
{

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[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;

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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_Std_Dev;

[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_Std_Dev;

[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 desktop 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.")]

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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

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```

{
[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
{

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```

[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("Partition 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."),

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```

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 system 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;

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[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;

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[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).")]

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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("Average 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 client.
// 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;
};

```