Dell Precision Optimizer
管理員指南

註、警示與警告

> **註:** 「註」表示可以幫助您更有效地使用產品的重要資訊。

> **警示:** 「警示」表示有可能會損壞硬體或導致資料遺失，並告訴您如何避免發生此類問題。

> **警告:** 「警告」表示可能的財產損失、人身傷害或死亡。

目錄

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簡介

本文件說明 IT 管理員可用來遠端管理 Dell Precision Optimizer 的工具、提示和建議。

Dell Precision Optimizer 元件

Dell Precision Optimizer 的四個主要元件是：

- 效能
- 追蹤與分析引擎 (TA)
- 系統維護 (SM)
- Dell Precision Optimizer Manager CLI (dpoCmd.exe)

上述每一個元件均作為 Windows 服務來實作，亦可作為 COM 伺服器。Dell Precision Optimizer 安裝程式套件會將這些服務連同 Dell Precision Optimizer 支援 DLL、使用者介面 (UI) 元件、核心模式裝置驅動程式等項目，安裝到 POA 安裝資料夾。此外，使用者登入時可安裝和啟動工作列應用程式。此應用程式會就各項 POA 事件通知使用者，例如更新完成以及需要重新開機等。

Dell Precision Optimizer 安裝程式套件也會負責建立 Dell Precision Optimizer 模組要使用的軟體登錄機碼。以下是預設路徑：

表 1. 預設路徑

名稱	路徑
安裝資料夾：	`C:\Program Files\Dell\PPO`
登錄路徑：	`HKLM\Software\Dell\PPO`
執行階段資料：	`C:\ProgramData\Dell\PPO`

安裝程式套件會將某些預設設定檔和原則複製至安裝資料夾。

主題：

- 解除安裝 Dell Precision Optimizer

解除安裝 Dell Precision Optimizer

透過下列步驟可將系統上的 Dell Precision Optimizer 解除安裝：

您可以從登錄中取得解除安裝命令，只要從下列位置讀取 `UninstallString` 字串的值即可：

表 2. 解除安裝命令的位置

名稱	命令的位置

若為 64 位元系統	`HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node`
	`\Microsoft\Windows\CurrentVersion\Uninstall\`
	`{D66A3355-FEA4-4F60-8BAF-D6CBEDB396D8}`

若為 32 位元系統	`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows`
	`\CurrentVersion\Uninstall\{D66A3355-`
	`FEA4-4F60-8BAF-D6CBEDB396D8}`

`UninstallString` 的範例值如下所示：

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

(i) **註:** 在此命令中，值 **-l0x0007** 可能會因系統而有所不同。

在命令提示字元 (以管理員身份執行)，執行上述命令將會啟動 Dell Precision Optimizer 應用程式的解除安裝程序。新增下列命令可修改以下命令，以便執行無訊息解除安裝：

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

若無訊息回應檔 (.iss 檔) 位於 `c:\temp` 資料夾，而其名稱為 **uninst.iss**，則下列命令會執行無訊息解除安裝：

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

效能

效能子系統包括下列模組：

- 原則處理引擎 (PPE)
- 設定檔更新工具 (profUpd.exe)

主題：

-
-

原則處理引擎

原則處理引擎或 PPE 會以 Windows 服務方式實作，在電腦開機時即開始執行，且不管使用者是否登入。

此模組提供可用來執行下列工作的介面：

- 啟用或停用設定檔
- 列舉輸入和輸出參數，以便建立新原則
- 為機器、使用者或第三方 Dell Precision Optimizer 應用程式儲存及擷取設定檔與原則。

設定檔更新工具

Dell Precision Optimizer UI 會使用此命令列工具 (profUpd.exe) 來檢查 Dell 伺服器上的設定檔以及更新。務必使用本機組態檔向 Dell Precision Optimizer 告知 Dell 伺服器的位址以及要使用的通訊協定 (例如 HTTP、HTTPS 或 FTP)。

(i) **註: 伺服器上的所有設定檔和原則皆會以數位方式簽署，並使用 AES-256 演算法加密儲存。**

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追蹤與分析

分析子系統能夠產生下列類型的報告：

- 系統分析報告
- 工作負載分析報告
- CPU 智慧報告
- GPU 智慧報告
- 系統診斷報告
- 效能通知

系統分析報告以 XML 格式提供由 Dell Data Vault (DDV) 應用程式收集的資料。

工作負載分析功能讓使用者分析其工作負載。

主題：

系統分析報告

使用者可以使用 Dell Precision Optimizer COM 介面來啟用或停用這些報告。此介面亦允許使用者配置系統分析報告的產生頻率，以便列舉和閱讀現有報告。系統分析報告 .XML 檔案含有會劃歸為 <ddv_group> 和 <ddv_subgroup> 元素的報告資料。相同類別的所有相關資料都歸入同一群組下。

所有與 thermistor 0 相關的資料都將歸入名為 **Thermistor 0** 的 DDV_GROUP 下。

報告設定

啟用系統分析

表 3. 啟用系統分析

屬性的詳細資料	說明
輸入：	啟用或停用核取方塊
預設：	已停用
說明：	此設定可讓 DDV 子系統開始資料收集。如果停用，則 DDV 不會啟用。啟用此選項後便會定期產生 DDV 報告，直至手動關閉該設定。此類別選項如有任何改變都將導致所有現有 DDV 原始資料被捨棄。

產生報告

表 4. 產生報告

屬性的詳細資料	說明
輸入：	選擇下列其中一個選項：

表 4. 產生報告 (續)

屬性的詳細資料	說明
	· 24 小時後 (每日) · 12 小時後 · 8 小時後 · 6 小時後 · 4 小時後
預設：	每天
說明：	啟用此選項後，DDV 會定期收集原始資料並定期產生報告。此設定控制 DDV 處理原始資料並將其轉為新報告的頻率。此類別選項如有任何改變都將導致所有現有 DDV 原始資料被捨棄。

啟用資料收集

表 5. 啟用資料收集

屬性的詳細資料	說明
輸入：	可從下列項目選取超過一個類別： · 電池 · 熱 · 風扇 · 處理器 · 記憶體 · 儲存空間 · 網路與藍牙
預設：	已啟用所有核取方塊
說明：	此設定讓使用者能夠控制要在報告中顯示的資料類別。

工作負荷分析

Dell Precision Optimizer 5.0 及更新版本可讓使用者描繪其工作負荷的特性，並判斷其資源使用量。當使用者開始分析時，Dell Precision Optimizer 會收集系統資源用量參數，例如 CPU、記憶體、磁碟和繪圖處理器 (GPU)。

CPU 智慧報告

Dell Precision Optimizer 5.0 和更新版本可讓使用者檢視增強型 Intel CPU 的資訊，包括處理器資訊以及每個邏輯處理器的即時資料。Dell Precision Optimizer UI 會以線圖的形式顯示此資料。

UI 將使用 COM 介面來取得下列處理器資訊：

· CPU 名稱
· 插槽數量
· 實體核心數量
· 超執行緒狀態 (已啟用/已停用)
· L1 快取大小 (KB)
· L2 快取大小 (KB)
· L3 快取大小 (KB)
· 每個邏輯處理器的 CPU 使用率
· 每個邏輯處理器的 CPU 主動相對頻率 (用於判定渦輪駐留)
· 系統的處理器佇列長度
· 系統執行緒的數量

繪圖處理器 (GPU) 智慧報告

Dell Precision Optimizer 5.0 和更新版本可讓使用者檢視增強型繪圖處理器 (GPU)，但是僅限於支援的 NVIDIA 和 AMD GPU 配接卡。其中包括繪圖處理器 (GPU) 配接卡和軟體的資訊，以及每個繪圖處理器 (GPU) 的即時資料。Dell Precision Optimizer UI 會以線圖的形式顯示此資料。

UI 將會使用 Dell Precision Optimizer 介面來取得下列繪圖處理器 (GPU) 資訊：

- 繪圖處理器 (GPU) 數量
- 繪圖處理器 (GPU) 驅動程式版本
- 繪圖處理器 (GPU) 配接卡名稱 (僅限 Active 繪圖處理器 (GPU) 0)
- 視訊 BIOS 的版本 (僅限 Active 繪圖處理器 (GPU) 0)
- Framebuffer 大小 (僅限 Active 繪圖處理器 (GPU) 0)

繪圖處理器 (GPU) 即時資料只能在使用者登入時，從特定的 Nvidia 和 AMD 配接卡取得。

(i) **註:** 在具備 **AMD GPU** 配接卡的某些行動系統上，只有在 **AMD** 繪圖處理器 **(GPU)** 配接卡上正在執行有效負載時，才會顯示有效的即時資料。

各繪圖處理器 (GPU) 的下列即時資訊將以折線圖的形式收集和顯示。

- 繪圖處理器 (GPU) 使用率
- 繪圖處理器 (GPU) 溫度
- 繪圖處理器 (GPU) 風扇 #0 轉速 (%)
- 視訊記憶體使用率

系統診斷報告

Dell Precision Optimizer 5.0 和更新版本可讓使用者執行系統診斷報告。這些都是 Microsoft 所提供的標準報告，例如系統報告、電池報告和可靠性報告。使用者必須能夠產生新的報告或檢視之前產生的最後一份報告。只有具備本機系統管理員權限的使用者才能使用此選項。

此功能是連接至現有 Microsoft 工具的捷徑。這個儀表板可提供下列報告：

- 系統診斷報告包含：
    - 診斷結果，列出系統中的錯誤和警告
    - 資源使用狀況概觀
- 系統可靠性報告包含：
    - 過去幾週內發生之應用程式、Windows 及其他故障的清單
    - 此期間的資訊事件和警告
    - Windows 穩定性指數值
- 電池報告 (僅有 Windows 8 及更新版本提供這個功能)：
    - 已安裝電池的詳細資料
    - 近期的使用狀況和歷程記錄
    - 電池容量和使用時間預估

效能通知

Dell Precision Optimizer 4.0 和更新版本可以啟用「效能通知」。您在以下任何一種情況都會收到通知：

- CPU 使用率過高
- 記憶體使用率過高
- 磁碟讀取/寫入作業過多

系統維護

Dell Precision Optimizer 系統維護或 SM 讓您依據下列衍生自 Dell Command | Update 的準則來篩選顯示或套用的更新：

· 嚴重性 (重大、建議和選用)
· 類型 (硬體驅動程式、應用程式、BIOS 和韌體)
· 類別 (音訊、晶片組、輸入、網路或藍牙、儲存裝置、影片和其他)

使用者意見回饋

Dell Precision Optimizer UI 會提供一個選項，讓使用者傳送意見回饋給 Dell。Dell Precision Optimizer UI 會提供一個連結/按鈕，使用者按一下後即可開始提出意見回饋。UI 會在瀏覽器中啟動一個 URL，讓使用者能夠使用 Dell 的標準表格來提供對 Dell Precision Optimizer 的意見回饋。

改善 Dell Precision Optimizer

Dell Precision Optimizer 客戶體驗改善計劃讓 Dell 客戶對未來 Dell Precision Optimizer 版本的開發方向能有所影響。與 Dell 分享 Dell Precision Optimizer 使用方式的相關資訊，即可對後續產品版本中進行的改良有所貢獻。

Dell Precision Optimizer 客戶體驗改善計劃遵循 Dell 隱私權政策的所有條款。所收集的資料僅限 Dell Precision Optimizer 使用情況及工作站的產品服務編號。我們所收集的資料不含任何個人資訊。您可隨時選擇加入或退出計畫。

此功能預設為停用。

企業工具

主題：

WMI 提供者

Dell Precision Optimizer 5.0 和更新版本包含 Windows Management Instrumentation (WMI) 提供者，讓使用者能夠存取以下資訊。請參閱附錄 A 取得有關 MOF 的說明。以下兩個檔案為 Dell Precision Optimizer 套件的一部分：

- Dell Precision Optimizer WMI 提供者：dpoProv.mof
- Dell Precision Optimizer SMS MOF 定義檔案：sms_def_dpo3.mof

- DDV 報告
- 產品版本
- 最近一次執行檢查更新的時間
- 最近一次系統更新時間
- 最近一次檢查設定檔
- 設定檔或原則觸發歷程記錄
- 使用中的設定檔清單
- 效能通知

DPOCMD.EXE

Dell Precision Optimizer 5.0 和更新版本提供 CLI 工具 dpoCmd.exe，讓 IT 管理員能夠執行下列操作：

- 新增新的設定檔或原則
- 列出所有設定檔
- 啟用或停用設定檔
- 安排具有特定篩選條件的系統分析報告
- 使用篩選條件來執行 Dell Precision Optimizer Dell 系統更新
- 使用篩選條件來檢查 Dell Precision Optimizer Dell 系統更新
- 匯出使用者建立的設定檔
- 匯入使用者建立的設定檔
- 使用下列 CLI 選項啟用/停用 UI 功能；這些功能也可以在 Dell Precision Optimizer 安裝程式中使用新的命令列參數加以控制：

表 6. 命令列交換器

控制	定義	預設	命令列交換器
ProfileControl	如果是 0，則不允許使用者啟用或停用設定檔	1	PROFCTRL
ProfileUpdate	如果是 0，則不允許使用者檢查新的設定檔	1	PROFUPD
SystemUpdate	如果是 0，則不允許使用者檢查系統更新	1	SYSUPD
DDVControl	如果是 0，則不允許使用者啟用或停用系統分析報告	1	DDVCTRL

表 6. 命令列交換器 (續)

控制	定義	預設	命令列交換器
UserFeedback	如果是 0，則不允許使用者傳送 Dell Precision Optimizer 意見反應	1	USRFB
WorkloadAnalysis	如果是 0，則不允許使用者執行工作負荷分析	1	WKLANL
GfxPlugins	如果是 0，則不會向使用者顯示 GfxPlugin 選項	1	GFXPLUGINS
ImproveDPO	如果是 0，則不會向使用者顯示「改善 Dell Precision Optimizer」設定	1	IMPROVEDPO
ISVCertDrvr	如果是 0，則不允許使用者檢視/安裝 ISV 認證的圖形驅動程式	1	ISVCERTGFX
SmartAlerts	如果是 0，則不允許使用者啟用或停用 Smart 警示	1	SMARTALERT

CLI 使用狀況：

```
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>] ...
```

- 其中 **<reportDuration>** 可以是 0、4、6、8、12 其中一個值

  - 0 代表每日報告
  - 4 代表 4 小時報告
  - 6 代表 6 小時報告，依此類推。
- **-r <ddvSubSystem>** 會移除該子系統，然後資料將不會顯示在產生的 DDV 報告中。<ddvSubSystem> 可以是下列其中之一：

  - 電池
  - 熱
  - 風扇
  - 處理器
  - 記憶體
  - 網路與藍牙
  - 儲存空間

```
dpoCmd.exe –cancelReports
```

dpoCmd.exe -enableFeatures <feature> [<feature> ...]，其中 <feature> 可能是下列其中之一：

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

```
dpoCmd.exe -disableFeatures <feature> [<feature> ...]
```
，其中 <feature> 可能是下列其中之一：

- 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>
```

其中 **-criticality** 可以是下列一項或多項：

- C => 重大
- R => 建議
- O => 選項

其中 **-filter:** 可以是下列一項或多項：

- B => BIOS
- D => 驅動程式
- A => 應用程式
- F => 韌體

其中 **-device:** 可以是下列一項或多項：

- A => 音訊
- C => 晶片組
- M => 滑鼠/鍵盤
- S => 儲存空間
- N => 網路/藍牙
- V => 視訊

安裝命令列交換器

Dell Precision Optimizer 5.0 安裝程式會提供命令列參數，讓 IT 管理員能夠控制用戶端套件的某些運作方式。在第 8.2 節中亦有提及這個清單。

表 7. 安裝命令列交換器

命令列交換器	說明
Setup.exe PROFUPD=0 WKLANL=0	以安裝 Dell Precision Optimizer，而且不允許使用者檢查是否有新設定檔或執行工作負荷分析。

此外，新選項 GUI=0 可讓 IT 系統管理員在沒有任何 UI 元件的情形下安裝 Dell Precision Optimizer 用戶端，亦即無周邊模式。使用者無法控制軟體。IT 管理員可使用新的 CLI 工具來啟用或停用其他執行階段功能。

使用 SCCM 和 WSI

IT 系統管理員使用 SCCM 和 WSI 方法來集中管理其系統和軟體應用程式。

Dell Optimizer 支援 SCCM 和 WSI，以進行設定與部署。如需有關 SCCM 的更多資訊，請參閱 www.docs.microsoft.com；有關 WSI，請參閱 www.vmware.com。

建立 Dell Optimizer 應用程式套裝的指示

請遵循這些步驟，建立可部屬至 Enterprise 所選用戶端系統上的 Dell Optimizer 套裝。

ⓘ **註: 各項步驟可能因您使用的 SCCM 版本不同而略有差異。**

1. 下載安裝所需的 Dell Optimizer 檔案。
2. 在**組態管理員**主控台：

   · 開啟**軟體庫**頁面，然後按一下**概觀** > **應用程式管理**。
   · 在**應用程式**按一下滑鼠右鍵，然後選取**建立應用程式**。
3. 在**建立應用程式**精靈中：

   · 選取**手動**並指定應用程式資訊。
   · 將應用程式名稱輸入為 **Dell Optimizer 1.0**，然後在**應用程式目錄**中按一下**下一步**。
   · 在**部署類型**頁面按一下**新增**。
   · 在**建立部署類型**精靈中，將**類型**選取為**指令檔安裝程式**，然後按一下**下一步**。
   · 輸入部署類型，然後按一下**下一步**。
   · 在內容位置中輸入 Dell Optimizer 檔案的位置。
   · 將**安裝程式**輸入為 "DellOptimizer.exe" /s。
   · 在**偵測方法**標籤中，按一下**新增**子句。
   · 偵測規則如下：

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

   · 按一下**確定**以關閉**偵測規則**視窗，然後在**建立部署類型**精靈中按一下**下一步**。
   · 依下列方式指定使用者經驗：

     a. **安裝行為**：為系統安裝。
     b. **登入要求**：無論使用者是否登入。
     c. **安裝程式是否顯示**：正常。
   · 在**需求**標籤中按一下**下一步**。
   · 在**相依性**標籤中按一下**下一步**。
   · 在**摘要**中按一下**下一步**並驗證**部署類型**已成功建立。
   · 關閉**建立部署類型**精靈。
4. 在**建立應用程式**精靈中，在**部署類型**標籤中按一下**下一步**，在**摘要**標籤中按一下**下一步**，然後確認此應用程式已成功建立。

部署應用程式的指示

建立套件後，可使用下列指示把其部署至選定的用戶端：

1. 在應用程式上按一下滑鼠右鍵，選取**部署**。
2. 選取您要安裝 Dell Optimizer 的裝置系列。
3. 確定已勾選**自動分配相依性內容**選項，按一下**下一步**。
4. 在**內容**標籤中，按一下**新增**來選取發佈點。
5. 在**部署設定**標籤中，執行下列項目：

   · 動作：安裝
   · 用途：必要的
6. 在**排程**標籤中，按一下**下一步**。
7. 在**使用者經驗**標籤中，選取使用者通知：在軟體中心顯示，並只顯示系統重新開機的通知。
8. 在**警示**標籤中按一下**下一步**，在**摘要**標籤中按一下**下一步**，然後確認部署完成。

驗證用戶端系統部署成功

若要驗證用戶端系統部署成功：

1. 在用戶端系統中開啟**軟體中心**，確認 Dell Precision Optimizer 已經安裝。

> (i) **註:** 在部署應用程式之後，可能需要幾分鐘進行安裝

2. 前往 `C:\\Windows\CCM\Logs` 並勾選 **AppDiscovery.Log**、**AppIntent.log** 和 **AppEnforce.log** 以便進行疑難排解。

使用 DPOCMD.EXE 變更 Dell Precision Optimizer 用戶端的運作方式

按照以下步驟即可在目標系統上執行 Dell Precision Optimizer CLI (dpoCmd.exe)，以變更 Dell Precision Optimizer 軟體在該系統中的運作方式。下例說明如何使用 dpoCmd.exe 來啟用 Dell Precision Optimizer 設定檔 (Adobe 的 After Effects)。

建立軟體套件

若要建立軟體套件：

1. 在**組態管理員**主控台：

    a. 開啟**軟體程式庫**頁面。
    b. 按一下**概觀**標籤。
    c. 開啟**應用程式管理**標籤。
    d. 在**套件**上按一下滑鼠右鍵，然後選取**建立新套件**。
2. 在**建立套件和程式**精靈中：

    a. 設定名稱：啟用 Dell Precision Optimizer 設定檔。
    b. 指定套件的相關資訊，並按一下**下一步**。
3. 在**程式類型**標籤中，選取**標準程式**。
4. 在**標準程式**標籤中：

    a. 名稱：啟用 Adobe After Effects
    b. 命令列：dpoCmd.exe –enableProfile {2F066600-FA52-4F57-890D-2621D39B0BE9}}
    c. 啟動資料夾：C:\program files\dell\ppo
    d. 執行：正常
    e. 程式可以執行：無論使用者是否登入
    f. 執行模式：用管理權限執行
    g. 磁碟機模式：用 UNC 名稱執行
5. 在**需求**標籤中，選取**此程式可在任何平台上執行**。
6. 按一下**下一步**，檢閱套件摘要，並確認套件已成功建立。

部署以啟用 Dell Precision Optimizer 設定檔軟體套裝

1. 在**組態管理員**主控台中：

    a. 開啟**軟體庫**頁面。
    b. 按一下**概觀**標籤。
    c. 開啟**應用程式管理**標籤。
    d. 按一下**套件**。
2. 在**啟用 DPO 設定檔**軟體套件上按滑鼠右鍵，並選取**部署**。
3. 在**部署軟體**精靈中：

    a. 在**一般**索引標籤中，按一下「瀏覽」以選取裝置系列，然後按一下**下一步**。
    b. 在**內容**標籤中，按一下**新增**以增加發佈點，然後按一下**下一步**。
    c. 在「部署設定」標籤中，執行下列項目：

      · 動作：安裝
      · 用途：必要的
      · 勾選**傳送喚醒**封包方塊。
    d. 在**排程**標籤中，選取的部署時間，並確定**重新執行運作方式**選項設為**總是重新執行程式**。若要立即部署，請按一下**新增**並選取**在此事件後立即指派：盡快**。
    e. 在**使用者經驗**標籤中，確保已勾選下列核取方塊

      i. 軟體安裝
      ii. 系統重新啟動 (如果是完成安裝必要的程序)

iii. 在截止日期或維護期間認可變更 (需要重新開機)。

f. 在**發佈點**標籤中：

i. 部署選項：自發佈點下載內容並在本機執行。

ii. 確定已勾選**允許用戶端在同一個子網路上與其他用戶端共享內容**。

。

g. 按一下**下一步**並確認部署已成功完成。

SSRS 報告

身為系統管理員，您可以根據從 Dell Precision Optimizer WMI 提供者收集的資料建立各種報告。若想建立報告，您可以納入 **sms_def_dpo3.mof** 來擴展資料庫的定義，並從 Dell Precision Optimizer 用戶端系統提取相應的資料。您可以選取您想檢閱的部分或全部資料元素。預設為選取全部 Dell Precision Optimizer 資料元素。

匯入 sms_def_dpo3.mof 檔案以設定硬體清查類別

1. 在**組態管理員**主控台：

   a. 開啟**管理**頁面。
   b. 按一下**概觀**標籤。
   c. 按一下**網站組態**標籤，並選取**用戶端設定**。
2. 在現有「用戶端設定」上按滑鼠右鍵，並選取屬性或建立新的「自訂用戶端設定」。
3. 在**硬體清查**標籤中，選取**設定類別**。
4. 選取**匯入**並瀏覽至 sms_def_dpo3.mof 檔案的位置。
5. 按一下**確定**來匯入檔案，然後關閉**硬體清查類別**視窗。

SQL 資料庫中填入收集的資料後，您就可以建立不同類型的 Dell Precision Optimizer 報告。Dell Precision Optimizer 軟體中隨附了一些範例 (*.RDL)。您可以匯入這些 RDL 檔案，並將其連接至您的 SQL 資料庫，然後執行這些報告。

若要匯入 .RDL 檔案

1. 開啟 SQL 伺服器資料工具。
2. 在「方案總管」中，在您想新增 .RDL 檔案的資料夾上按滑鼠右鍵。

   a. 選取**加入現有項目**。
   b. 選取 .RDL 檔案。
3. 匯入檔案後，開啟此檔案並選取**設計**標籤。

若要確保 .RDL 檔案使用正確的資料來源

1. 在**報告資料**窗格中，按一下**資料集**，然後在其中一個資料集上按滑鼠右鍵並選取**資料集屬性**。
2. 在**資料集屬性**視窗內：

   a. **使用報告中內嵌的資料集**為已選取狀態。
   b. 在**資料來源**下，按一下**新...**。
   c. 在**資料來源屬性**視窗中，選取**使用共用資料來源參考**並選取正確的資料來源。
   d. 按一下**確定**。
3. 對**資料集**資料夾中所有其他資料集重複第 1 步和第 2 步。

多個系統的磁碟資訊

此報告會使用系統最新的系統分析報告來顯示多個系統的磁碟資訊。

表 8. 多個系統的磁碟資訊

產品服務編號	讀取的位元組 (MB)	寫入的位元組 (MB)	讀取時間 (%)	寫入時間 (%)	閒置時間 (%)
98K94X1	0	0	0	0	100
F8W4WZ1	0	460	0	0	98
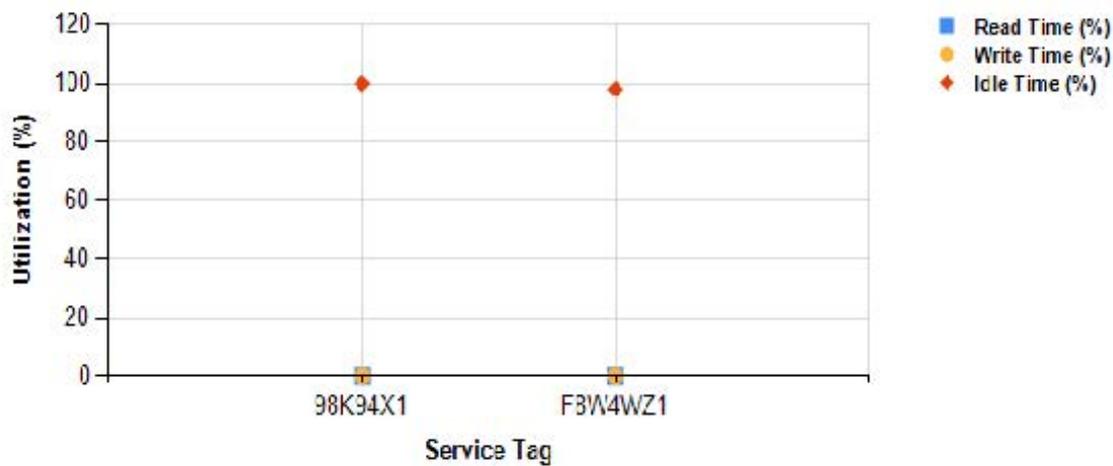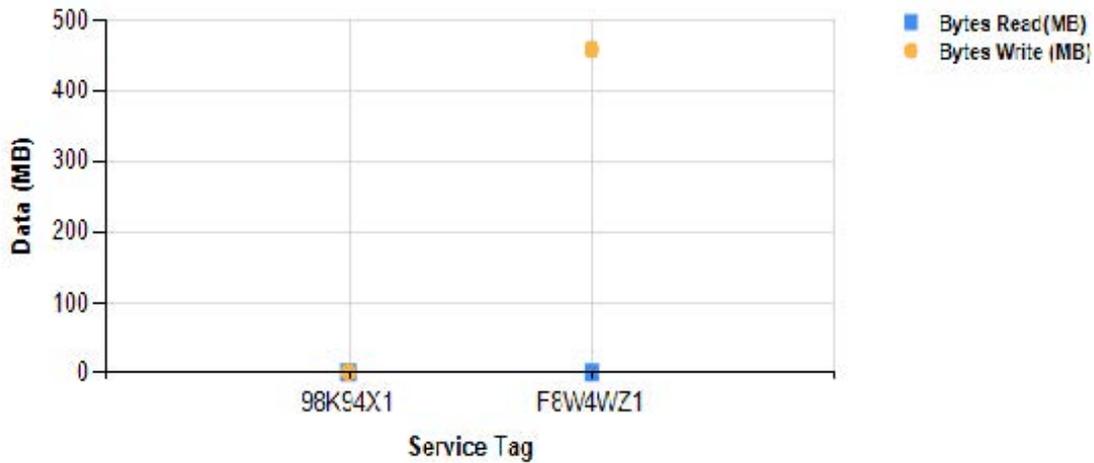
單一系統的磁碟資訊

此報告會在多份報告中顯示單一系統的磁碟資訊。

表 9. 單一系統的磁碟資訊

報告日期	讀取的位元組 (MB)	寫入的位元組 (MB)	讀取時間 (%)	寫入時間 (%)	閒置時間 (%)	執行時間 (小時)
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
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

表 9. 單一系統的磁碟資訊 (續)

報告日期	讀取的位元組 (MB)	寫入的位元組 (MB)	讀取時間 (%)	寫入時間 (%)	閒置時間 (%)	執行時間 (小時)
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
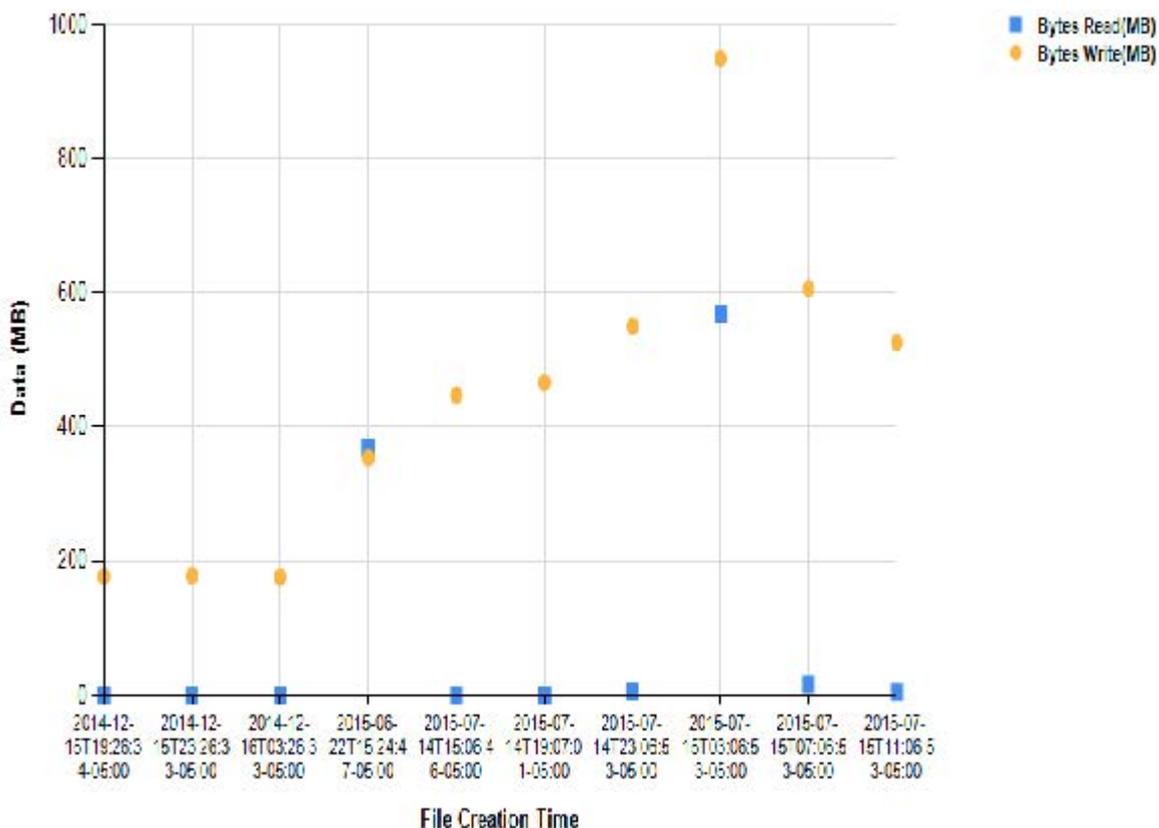
KACE

這是現今的 IT 管理者用來集中管理系統與軟體應用程式的方法之一。在本節中,我們將舉例說明 IT 管理員如何使用 KACE 裝置來管理 Dell Precision Optimizer 應用程式。

(i) **註: KACE 裝置 6.4.120756 K1000 已驗證下列步驟。如果您使用的是不同版本的 KACE,實際的步驟可能稍有不同。**

使用 KACE 部署 Dell Precision Optimizer 的指示

IT 管理員可以使用以下程序在其網域的所選用戶端系統上部署 Dell Precision Optimizer 應用程式。

建立安裝指令碼

從您的 KACE 裝置主控台:

1. 瀏覽至**指令檔編寫**>**指令碼**->**選擇動作**->**新增**。
2. 在**指令碼詳細資料**頁面上輸入下列資訊:

- 名稱 -> 安裝 DPO
- 啟用 -> 請勾選此方塊
- 類型 -> 線上 K 指令碼
- 說明 -> 此指令碼將會安裝 DPO 用戶端軟體
- 部署 -> 無
- 作業系統 -> 取消勾選**選取特定的作業系統**並選取 Microsoft Windows
- **(替代) 作業系統** -> 選取要用於部署的特定 Windows 作業系統
- **Windows 執行身分** -> 本機系統
- 通知 -> 無
- 排程 -> 無
- 相依性 -> 以新相依性的形式新增所有 DPO 套件檔案
- 工作 -> 選擇新工作
- 確認 -> 按一下**新增**，然後選取**啟動程式**，並輸入下列資料：

  - 目錄 -> $(KACE_DEPENDENCY_DIR)
  - 檔案 -> PoaInstaller.exe
  - 等待完成 -> 勾選
  - 可見 -> 取消勾選
  - 參數 -> LOGFILE=c:\temp\dpo.log /s
  - 儲存變更。
- 成功時 -> 無
- 補救 -> 無
- 補救成功時 -> 無
- 一次補救失敗 -> 無
- 工作 -> 選擇新工作
- 確認 -> 按一下**新增**，然後選取**確認檔案存在**，並輸入下列資料：

  - 目錄：C:\Program Files\Dell\DPO
  - 檔案：dpoCmd.exe
  - 儲存變更。
- 成功時 -> 無
- 補救 -> 無
- 補救成功時 -> 無
- 一次補救失敗 -> 無
- 按一下**儲存**。

在所選系統上執行安裝指令碼

從您的 KACE 裝置主控台：

1. 按一下**指令碼編寫**，然後選取**立即執行**。
2. 從「指令碼」下拉式功能表選取**安裝 DPO**。
3. 在**標籤**底下，選取您想要部署 Dell Precision Optimizer 之 Windows 裝置的標籤，或手動選取一組系統。
4. 按一下**立即執行**。
5. 按一下**儲存**。

這樣便會在所選系統上啟動 Dell Precision Optimizer 用戶端軟體部署。這些步驟亦可自訂。

使用 DPOCMD.EXE 變更 Dell Precision Optimizer 用戶端的運作方式

按照以下步驟即可在目標系統上執行 Dell Precision Optimizer CLI (dpoCmd.exe)，以變更 Dell Precision Optimizer 軟體在該系統中的運作方式。下例說明如何使用 dpoCmd.exe 來啟用 Dell Precision Optimizer 設定檔 (Adobe 的 After Effects)。

建立安裝指令碼

從您的 KACE 裝置主控台：

1. 瀏覽至**指令檔編寫**>**指令碼**->**選擇動作**->**新增**。
2. 在**指令碼詳細資料**頁面上輸入下列資訊：

- **名稱** -> 啟用 DPO 設定檔 After Effects
- **啟用** -> 請勾選此方塊
- **類型** -> 線上 K 指令碼
- **說明** -> 此指令碼將會在 DPO 用戶端軟體啟用 **After Effects 設定檔**
- **部署** -> 無
- **作業系統** -> 取消勾選**選取特定的作業系統**並選取 Microsoft Windows
- **(替代) 作業系統** -> 選取要用於部署的特定 Windows 作業系統
- **Windows 執行身分** -> 本機系統
- **通知** -> 無
- **排程** -> 無
- **相依性** -> 無
- **工作** -> 選擇新工作
- **確認** -> 按一下**新增**，然後選取**啟動程式**，並輸入下列資料：

  - **目錄** -> C:\Program Files\Dell\PPO
  - **檔案** -> dpoCmd.exe
  - **等待完成** -> 勾選
  - **可見** -> 取消勾選
  - **參數** -> -enableProfile {2F066600-FA52-4F57-890D-2621D39B0BE9}
  - 儲存變更。
- **成功時** -> 無
- **補救** -> 無
- **補救成功時** -> 無
- **一次補救失敗** -> 無
- **工作** -> 選擇新工作
- **確認** -> 按一下**新增**，然後選取**確認檔案存在**，並輸入下列資料：

  - 目錄 -> C:\Program Files\Dell\DPO
  - **檔案** -> dpoCmd.exe
  - 儲存變更。
- **成功時** -> 無
- **補救** -> 無
- **補救成功時** -> 無
- **一次補救失敗** -> 無
- 按一下**儲存**。

在所選系統上執行這個指令碼

從您的 KACE 裝置主控台：

1. 按一下**指令碼編寫**，然後選取**立即執行**。
2. 從「指令碼」下拉式功能表選取**啟用 DPO 設定檔 After Effects**。
3. 在**標籤**底下，選取您想要部署 Dell Precision Optimizer 之 Windows 裝置的標籤，或手動選取一組系統。
4. 按一下**立即執行**。

自訂報告

以下這些範例顯示如何使用 Dell Precision Optimizer 用戶端的 WMI 類別從這些用戶端收集一些資料，並建立自訂報告。Dell Precision Optimizer 提供多種 WMI 類別，讓 IT 管理員能夠建立各式各樣的報告。以下步驟說明如何建立 Dell Precision Optimizer 報告。IT 管理員可自訂必須收集的資料，並瞭解如何呈現該等資料。

建立自訂清查規則

從您的 KACE 裝置主控台：

1. 按一下**清查**，然後選取**軟體**。
2. 選擇**動作**然後選取**新增**。
3. 在**軟體詳細資料**頁面上輸入下列資訊

   - **名稱** -> DPO 清查範例
   - **版本** -> v1

- **發佈者** -> Dell
- **支援作業系統** -> 請選取作業系統
- **自訂清查規則** -> ShellCommandTextReturn(wmic /namespace:\\root\cimv2\DPO Path DPO_Profiles get /ALL)
- 按一下 **Save (儲存)**。

4. 按一下新的自訂清查記錄,然後將游標停留在剛建立的記錄上方。記下 URL 結尾的識別符 (ID 號碼)。有 ID 號碼的 URL 會顯示在頁面的左下角。稍後建立報告時會需要此資訊。

強制收集清查

從您的 KACE 裝置主控台:

1. 按一下**清查**然後選取**裝置**。
2. 選取已安裝 Dell Precision Optimizer 的裝置 (您可以針對此用途使用 SmartLabel)。
3. 選擇**動作**然後選擇**強制清查**。
4. 在清查週期完成後,請瀏覽至其中一個已連線的所選裝置。
5. 在**裝置詳細資料**頁面上,按一下**軟體**,展開**自訂清查欄位**。這會顯示設定檔清單及其目前狀態。

ⓘ **註: 現在指令檔及自訂清查均已設定,並且已在所有需要的系統上完成自訂清查週期,您就可以多加利用 K1000 的報告功能。雖然您確實可以使用精靈式報告從 K1000 擷取 Dell Precision Optimizer 資訊,我們將會使用自訂 SQL 報告來處理資訊,加以篩選,再將這些資訊製作成有用的報告。**

建立報告

從您的 KACE 裝置主控台:

1. 按一下**報告**,然後選擇**報告**。
2. 選擇**動作**並選擇**新增 (SQL)**。
3. 在**報告詳細資料**頁面上,輸入下列資料:
   - 標題 -> Dell Precision Optimizer 設定檔報告範例
   - 說明 -> 這是一個 Dell Precision Optimizer 報告範例...
   - 類別 <任何> 或新類別 -> DPO 報告
   - 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
```

   在建立自訂清查規則時,使用自訂清查的 ID 號碼來取代上方收集的 XXXX。
4. 按一下 **Save (儲存)**。

執行報告

從您的 KACE 裝置主控台:

1. 按一下**報告**,然後選擇**報告**。
2. 搜尋 **DPO** 來檢視您的報告。
3. 選取所需的報告 (例如 DPO 設定檔報告範例),然後選擇您要的報告格式,例如 HTML。

附錄 A - dpoCmd.exe 結束代碼

```
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;
```

附錄 B – WMI 類別定義檔案

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

#pragma autorecover

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

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

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

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

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

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

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

```
Description("This class associates DPO_HardwareInfoToBiosInternalLogs"
"instance(s) with an instance of DPO_HardwareInfo."),
dynamic:ToInstance,
PROVIDER("DPOProv"):ToInstance
]
class DPO_HardwareInfoToBiosInternalLogs
{
[key] DPO_HardwareInfo          REF         Antecedent;
[key] DPO_BiosInternalLogs      REF         Dependent;
};
/****************************************************************
 * DPO_WWAN
 * This has the Wireless WAN adapter information from a summary
 * log. There may be multiple instances of this class for each
 * summary file.
 ****************************************************************/
[Description("Wireless WAN adapter information."),
Dynamic,Provider("DPOProv")]
class DPO_WWAN
{
    [
      Description("Unique ID from the summary file."),
      Key
      ]string HardwareInfoGUID;

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

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

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

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

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

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

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

real32
                              Charge_mV_Std_Dev;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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


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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```
uint8    Free_Fall_Count_Normalized;

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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


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

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

sint16  Index;

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

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

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

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

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

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

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

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

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

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

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

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

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


/************************************************************
*    DPO_HardwareInfoToFreeFall
*    This class associates DPO_FreeFall instance(s) with an
*    instance of DPO_HardwareInfo.
************************************************************/
[Association : ToInstance,
```

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

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

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

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

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

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

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

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

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

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

```
};

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

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

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

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

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

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

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

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

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

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

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

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

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


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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

/*
Current DPO version

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


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

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

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

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

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

[
Description("Date/Time of last check for updated profiles")
```

```
]
string    LastCheckForProfiles;
};

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

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

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

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

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

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

};

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

[
Description("Name")
]
string    ProfileName;

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

/************************************************************
*     DPO_SmartAlerts
************************************************************/
[Description("DPO Smart Alerts"),
Dynamic,Provider("DPOProv") ]
class DPO_SmartAlerts
{
[
```

```
Description("Unique ID of alert"),
Key
]
string    AlertGUID;

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

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

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

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

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

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

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

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

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

};

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

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

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