



White Paper

Extending Altiris Inventory Solution with Dell OpenManage Server Administrator (OMSA)

Produced By
Altiris Technical Services in
Conjunction with Dell Engineering

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Executive Summary

Both Altiris Inventory Solution and Dell OpenManage Server Administrator (OMSA) offer Dell customers significant systems management benefits when used independently. If leveraged together however, significant manageability gains can be realized.

Dell OMSA publishes hardware specific data via WMI that Altiris Inventory Solution can be configured to collect. While most of the OMSA-published data is already available via a standard Altiris inventory scan, there is one notable exception – the Embedded Server Management (ESM) log. This log maintains a list of all events generated by the hardware (such as error-correcting code (ECC) issues, system reset and boot, and probe threshold changes).

This data can be centrally stored in the Altiris database and viewed in web reports to provide easy, enterprise-wide analysis of Dell server hardware. Today, Dell offers no centralized ability to query this information. A customer with 400 Dell servers has to separately analyze and view 400 different ESM logs. Altiris Inventory Solution provides a fully automated ability to collect ESM log data, manage it centrally and send proactive alerts based on preset conditions.

This white paper offers sample resources to demonstrate the integration between Altiris Inventory Solution and Dell OMSA. Resources include prebuilt reports, sample data and a XML scan definition already created to pick up the ESM log. These resources can be downloaded at <http://www.ibase.us/content/resources/dell/altirisomsascan.zip>.

Altiris and Dell continue to work together to bring industry leading systems management capabilities to their customers.

Introduction

Altiris Inventory Solution provides a powerful platform for collecting detailed hardware and software information throughout an enterprise. While the product boasts more than 160 out-of-the-box web reports, the solution's architecture also provides the ability to easily create customer-defined web reports and to have the default inventory scan extended to collect entirely new datasets. Simple XML configuration files can tell Altiris Inventory Solution to look for new information from a variety of sources including Windows Management Instrumentation (WMI).

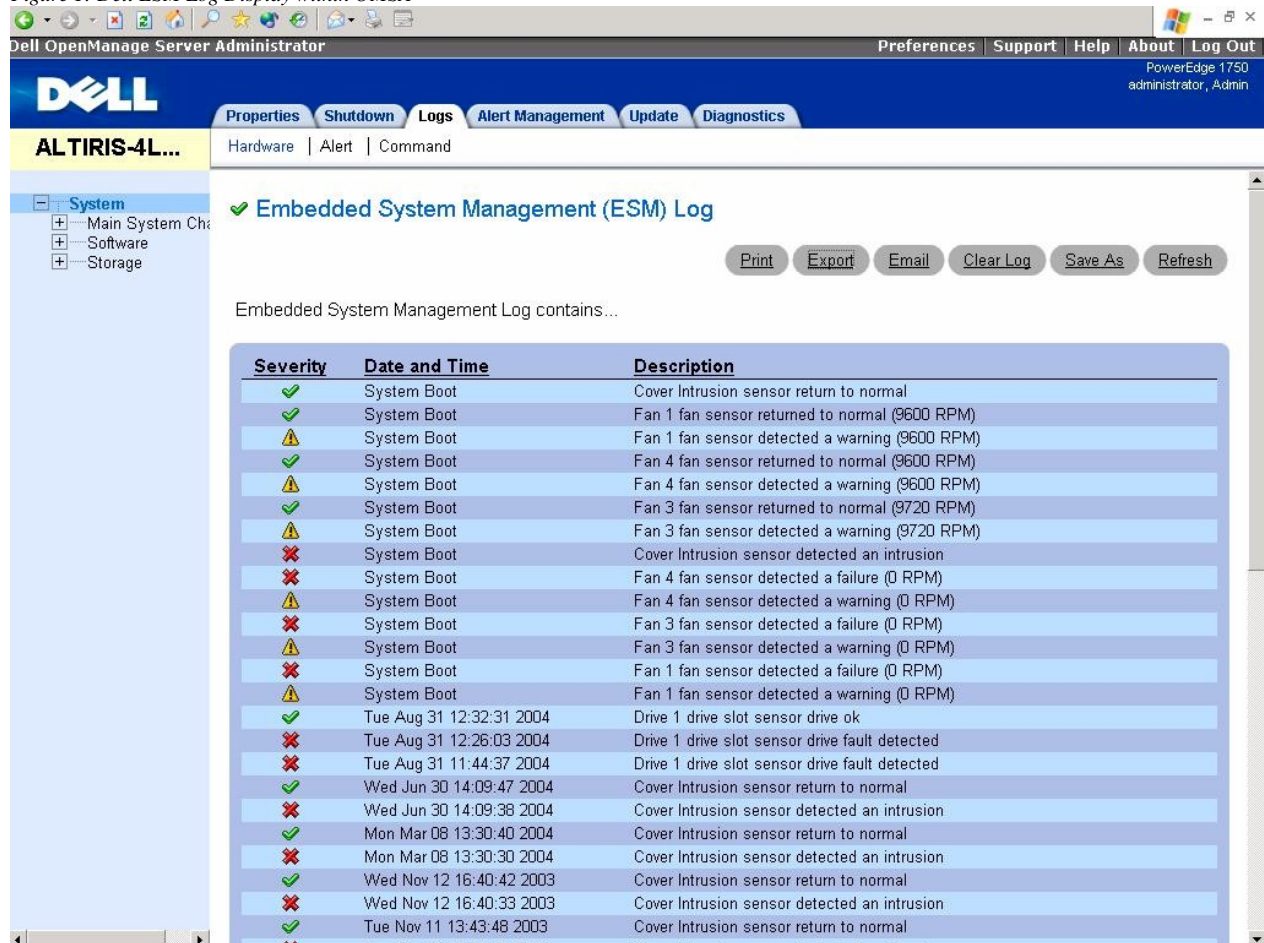
Dell's OpenManage Server Administrator (OMSA) software can also be installed on Dell servers to improve overall system manageability. One of OMSA's many benefits is the fact that it publishes Dell-specific hardware information via WMI object properties.

Customers using both Altiris Inventory Solution and Dell OMSA can leverage the two together simply by extending the Altiris inventory scan to collect OMSA-published data. While most of the OMSA-published data is already available via a standard Altiris inventory scan, there is one notable exception – the Embedded Server Management (ESM) log.

What is the ESM log?

The Dell server hardware log, also referred to as the Embedded Server Management (ESM) log, maintains a list of all system events generated by the hardware, such as error-correcting code (ECC), system reset and boot, and probe threshold changes. Administrators can refer to this log when hardware errors appear or when the system is not functioning properly. This log can be viewed by clicking the Logs tab and Hardware subtab in OMSA (see Figure 1). It is also available from the remote access service of Server Administrator if remote access controller hardware is installed on the system. When full, the hardware log must be cleared, which is possible from the Hardware Log tab in a Main System Chassis view. (*Alerts and Security Features of Dell OpenManage Server Administrator*, Manoj Gujarathi and Donnie Bell, May 2003)

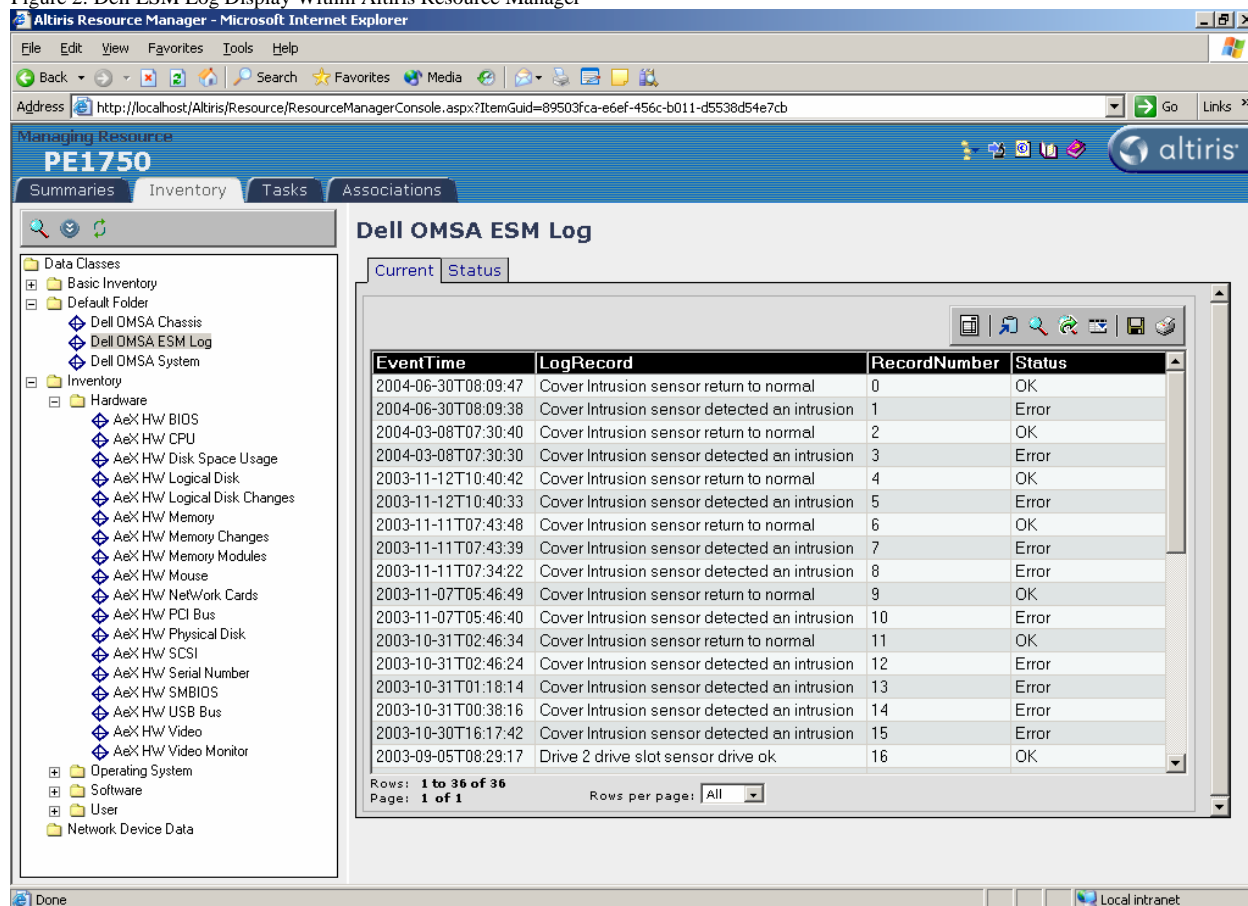
Figure 1: Dell ESM Log Display within OMSA



What are the Benefits of Altiris Inventory Scanning the ESM Log?

Foremost among the advantages is the simple fact that ESM logs from all Dell servers can be pulled into the Altiris database for easy, centralized management and reporting. Because the data can be automatically collected by the Altiris inventory scan, customers reduce the time required to manually view ESM logs one at a time. Altiris reports allow for quick analysis across all server logs at once. For example, instead of looking at 400 individual server logs via OMSA, it just takes seconds to run the Altiris report to search all ESM logs for a given string (see Figure 3). Lastly, notification policies can be created to proactively send emails or create helpdesk tickets based upon certain ESM log conditions. The result is improved manageability while reducing management time and complexity.

Figure 2: Dell ESM Log Display Within Altiris Resource Manager



Requirements

Customers who wish to extend Altiris Inventory Solution to collect server ESM logs must satisfy the following requirements:

- Dell OMSA version 3.8 or later must be installed on all Dell servers to be scanned. If OMSA is installed, the current version can be determined using the following command line:

```
omreport about details=true
```

Also please note that Altiris Deployment Solution for Dell Servers can be used to deploy Dell OMSA from a central console. A silent, unattended installation of OMSA can be performed with the following command line:

```
setup.exe /i license=yes
```

- Altiris Notification Server 6.0.4818 or later
- Altiris Inventory Solution 6.0.139 or later

Downloads

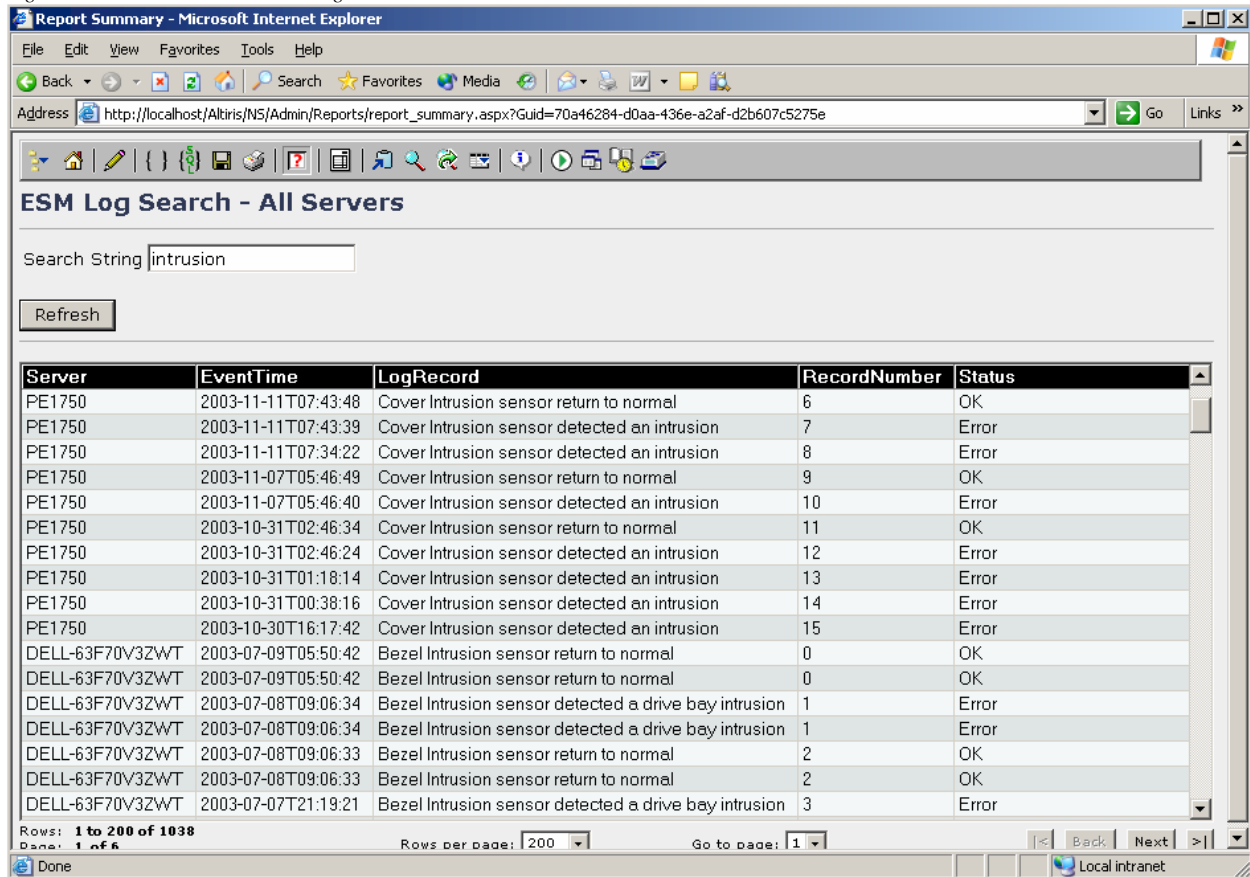
As mentioned above, this white paper references resources that can be downloaded and tested in a lab environment. The provided samples will help administrators better understand how easy it is to extend Altiris Inventory Solution to work with Dell OMSA. Specifically, three files are included in the download:

1. A XML inventory configuration file that will extend Altiris Inventory Solution to pick up the ESM log if OMSA is installed.
2. An XML file that can be imported into Altiris Inventory Solution to provide 3 new web reports to analyze ESM log information.
3. A sample NSE file that can be loaded into Altiris Inventory Solution to test the provided reports and ESM log integration with the Altiris Resource Manager.

Customers can modify the provided XML configuration file to further extend the Altiris scan for other Dell-specific WMI values or to create entirely new web reports querying ESM log data. The aforementioned files are included in a zip package that can be downloaded at <http://www.ibase.us/content/resources/dell/altirisomsascan.zip>.

Please note that these files are provided “as is” and are not supported by Altiris Technical Support. However, the general ability to extend the Altiris Inventory Solution scan is a fully documented and supported feature of the Altiris product. For those who would like additional information regarding this feature, please consult Altiris Inventory Solution product documentation.

Figure 3: Altiris Searches All ESM Logs At Once



Extending the Scan

The process of extending the Altiris Inventory scan is relatively simple. Once the Altiris framework (i.e., Notification Server) has been installed, Altiris Inventory Solution can be downloaded and installed from the “Upgrade/Install Additional Solutions” option on the **Configuration** tab of the Altiris console. Once Inventory Solution is installed, an administrator has several options to configure policies that govern how and when the Altiris hardware and software scans are executed.

Altiris inventory scans are executed by running the AeXInvSoln.exe program on each target machine. This executable looks to a corresponding *.ini file to provide various input options that direct the types of scans to run and their sequence. The *.ini file also can be used to define whether collected inventory data is sent back to the Altiris server as an HTTP post or a SMB file copy. These *.ini and scan files exist primarily in two different locations on the Altiris server:

- 1.) **AeXWebInvPkg.exe** – This 3MB package contains all the necessary files for an Altiris inventory scan to run on a system. The package is located on the Altiris Notification Server at C:\Program Files\Altiris\Notification

Server\NSCap\Bin\Win32\X86. The *.ini file that drives the scan in this package is AeXIsHttp.ini. The AeXWebInvPkg.exe package can be run in standalone mode (i.e., no Altiris agent has to be installed) in several different ways:

- a. Executing \\<Altiris Server
Name>\NSCap\Bin\Win32\X86\AeXWebInvPkg.exe via login script or some other software delivery tool.
 - b. Having end users click the following web link in an HTML-based email or web page **http://<Altiris Server
Name>/Altiris/NS/nscap/Bin/Win32/X86/AeXWebInvPkg.exe**.
 - c. The package can be copied to a USB key, burnt to a CD or copied to some other media and physically moved to the computer to be scanned.
- 2.) **Via Policy** – The default policies that install with Altiris Inventory Solution leverage the same files referenced in item 1 above with one exception - they are not packaged into a single file to accommodate distribution. Instead these files are directly accessible on the Altiris Notification Server at C:\Program Files\Altiris\Notification Server\NSCap\Bin\Win32\X86\Inventory Solution. The AeXInvSoln.ini file drives the scan for these files.

To extend either of these scans simply:

- 1.) Download <http://www.ibase.us/content/resources/dell/altirisomsascan.zip>, extract the **DellOMSAScan.xml** file and copy it into the same directory with AeXInvSoln.exe. If you are using the agent-based scanning method, simply copy this file to C:\Program Files\Altiris\Notification Server\NSCap\Bin\Win32\X86\Inventory Solution. If you are using the agentless inventory scan method, modify the web package file referenced in item one above by using the AeXPkgEditor.exe utility (located at C:\Program Files\Altiris\Notification Server\NSCap\Bin\Win32\X86\). This utility allows an administrator to open a web package and add or delete files. It also allows an administrator to modify the AeXIsHttp.ini file in the package without having to extract it first and then import it back in.
- 2.) Modify the appropriate *.ini file to reference the custom inventory XML file. The default contents of these *.ini files are listed below:

```
aexauditpls.exe /hidden /output xml
aexmachinv.exe
aexcustinv.exe /in .\AeXCustInvStd.cit /out AeXCustInvStd.nsi
aexexchpls.exe /hidden /output xml
aexsnplus.exe /output xml
aexsninvcollector.exe /hidden /o ..\..\..\EvtInbox
```

Simply add the bolded line below:

```
aexauditpls.exe /hidden /output xml
aexmachinv.exe
aexcustinv.exe /in .\DellOMSAScan.xml /out DellOMSAScan.nsi
aexcustinv.exe /in .\AeXCustInvStd.cit /out AeXCustInvStd.nsi
```

```

aexexchpls.exe /hidden /output xml
aexsnplus.exe /output xml
aexnsinvcollector.exe /hidden /o ..\..\..\EvtInbox

```

This added line directs AeXInvSoln.exe to look into the DellOMSAScan.xml file and scan the new resources defined there. The output of the scan will be written into the DellOMSAScan.nsi file on the machine to be scanned. Each of the executables in the above list references a different type of scan. Each scan will generate one or more *.nsi files containing the results of the scan. When the final AeXNsiInvCollector.exe process runs, all *.nsi files are packaged into a single *.nse file that represents all the new scan data for a system.

The first time a machine is scanned the resulting *.nse file is typically around 400K in size. Subsequent scans can analyze pre-existing *.nsi files to determine what inventory data is new. In this case, only the new information is packaged into a *.nse (typically between 10K and 25K) and forwarded up to the Altiris server.

Optional switches are available to remove residual *.nsi data from a system to force a comprehensive inventory post. Additionally, a **/zfp** switch is also provided to enable a zero footprint scan that leaves no system modifications behind as evidence that a scan has ever been performed.

Modifying DellOMSAScan.xml

The provided DellOMSAScan.xml file pulls data from three different WMI classes published by Dell's OMSA software. See the example below of the class in the file that pulls data from the the DELL_EsmLog WMI class:

```

<InventoryClass name="Dell OMSA ESM Log" manufacturer='Altiris' description=''
platform='Win32' version='1.0' mifClass='Altiris|DELLOMCI|1.0'>
<xml xmlns:s="uuid:BDC6E3F0-6DA3-11d1-A2A3-00AA00C14882"
xmlns:dt="uuid:C2F41010-65B3-11d1-A29F-00AA00C14882" xmlns:rs="urn:schemas-
microsoft-com:rowset" xmlns:z="#RowsetSchema">
<s:Schema id="RowsetSchema">
<s:ElementType name="row" content="eltOnly" rs:updatable="true">
<s:AttributeType name="c0" rs:name="EventTime" rs:basecolumn="EventTime"
rs:number="1" rs:nullable="true" mifAttrId="1">
<s:datatype dt:type="string" dt:maxLength="255"/>
</s:AttributeType>
<s:AttributeType name="c1" rs:name="LogRecord" rs:basecolumn="LogRecord"
rs:number="2" rs:nullable="true" mifAttrId="2">
<s:datatype dt:type="string" dt:maxLength="255"/>
</s:AttributeType>
<s:AttributeType name="c2" rs:name="RecordNumber" rs:basecolumn="RecordNumber"
rs:number="3" rs:nullable="true" mifAttrId="3">
<s:datatype dt:type="string" dt:maxLength="255"/>
</s:AttributeType>
<s:AttributeType name="c3" rs:name="Status" rs:basecolumn="Status"
rs:number="4" rs:nullable="true" mifAttrId="4">
<s:datatype dt:type="string" dt:maxLength="255"/>
</s:AttributeType>
</s:ElementType>
</s:Schema>

```

```
<rs:data>
<%foreach wmiobject="o" namespace="ROOT\CIMV2\Dell" wql="select * from DELL_EsmLog"%>
<z:row
  c0="<%writexml "wmi:o.EventTime"%>"
  c1="<%writexml "wmi:o.LogRecord"%>"
  c2="<%writexml "wmi:o.RecordNumber"%>"
  c3="<%writexml "wmi:o.Status"%>"
  />
<%next%>
</rs:data>
</xml>
</InventoryClass>
```

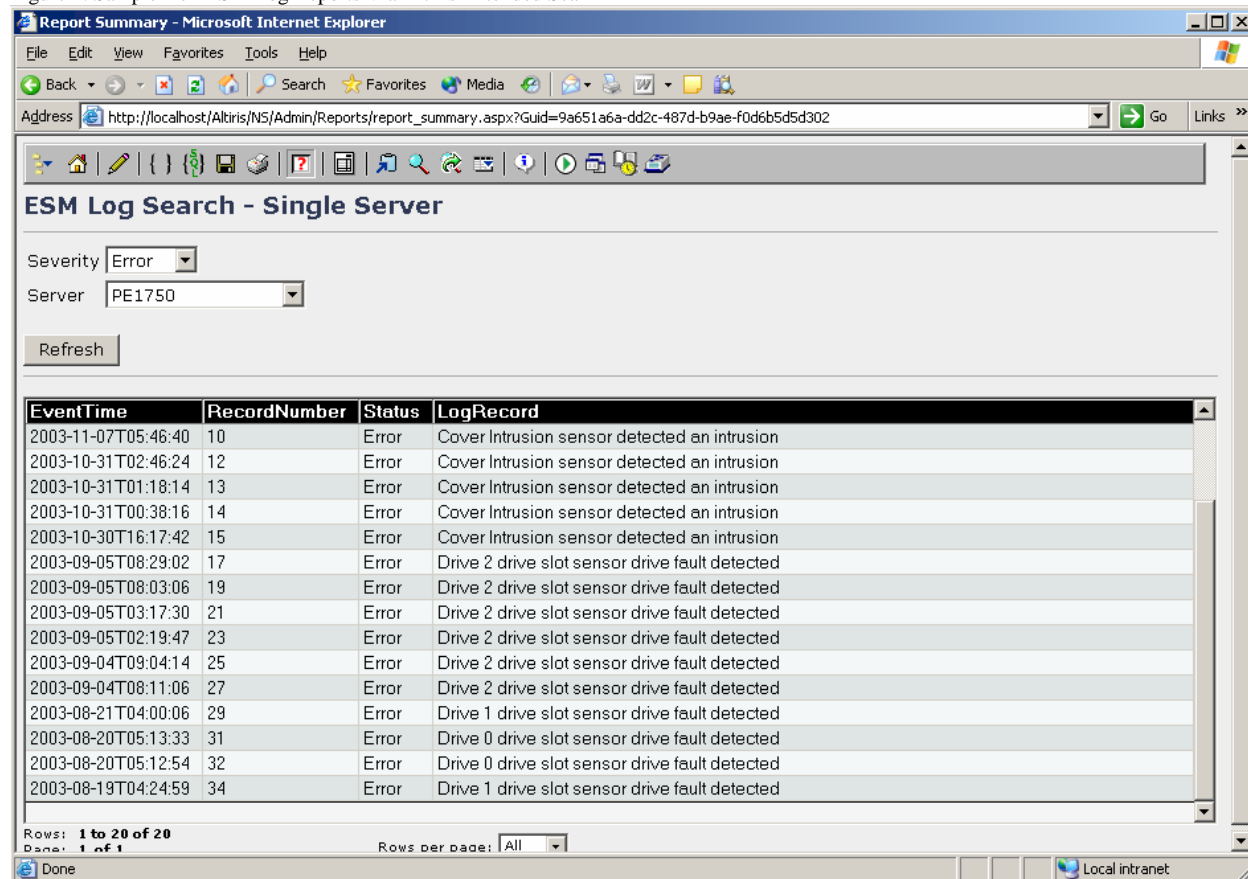
The name attribute of the InventoryClass element is not only the class name but it is also the display name in the Altiris console that will group any data it collects. Note in Figure 2 above the three names under the Default Folder listing. These are the names defined for each of the classes defined in the DellOMCIScan.xml file. Each class in the XML configuration file maps directly to the WMI class it pulls data from.

The <s:Schema> element defines the database schema for the rowset including column names, column order, data type and length. When a *.nse file is posted to the Altiris server any new incoming data is recognized and the Altiris database schema is automatically extended to support it. XML class names are prepended with “Inv_” to become the database table names with columns created per the <s:Schema> section of the XML file.

Lastly, in the above example a simple loop is used to iterate through each instance of the Dell_EsmLog WMI class in the Root\Dell namespace. A different instance of the class exists for each ESM log entry. See the right pane in Figure 2 above for an example of how this WMI class data appears in the Altiris console.

Note that this XML structure can be modified to reference **any** WMI class and retrieve any properties from the corresponding object.

Figure 4: Sample Dell ESM Log Reports Via Altiris Extended Scan



Installing the Sample Reports

To install the sample reports:

1. Find the **DellOMSAScanReports.xml** file that is included in the accompanying resource download for this white paper (<http://www.ibase.us/content/resources/dell/altirisomsascan.zip>).
2. In Altiris Notification Server, click the **Reports** tab and browse to **Assets and Inventory > Inventory > Windows**.
3. Right-click **Windows** and select **Import** from the popup menu.
4. Browse to the **DellOMSAScanReports.xml** file and click **Open**. Please wait while the reports load into your console.

Note that these reports were written to leverage data collected by the **DellOMSAScan.xml** custom inventory file. Without the corresponding database schema defined in this file the reports will not function properly.

What if OMSA is Not Installed During the Altiris OMSA Scan?

If OMSA is not installed on a machine that is scanned with the Altiris custom inventory scan no OMSA data will be returned. The Altiris inventory scan will continue to function normally. No error or warning messages will be displayed to the end user. The only indication that an attempt was made to find the OMSA data will be an entry in the log file of the Altiris agent software that will state “could not initialize query with namespace: root\dell.”

To view a list of all your Dell hardware running OMSA see the **Dell Servers Running OMSA** report provided with the downloaded resources (<http://www.ibase.us/content/resources/dell/altirisomsascan.zip>).

Conclusion

Altiris and Dell continue to work together to bring industry leading management solutions to our customers. Together, Altiris and Dell OMSA offer a more powerful platform for managing Dell server hardware than either solution can provide independently.

Lastly, note that Altiris Inventory Solution can be extended to work with Dell client hardware also. For more information on this capability please reference the white paper titled “Extending Altiris Inventory Solution with Dell OpenManage Client Instrumentation (OMCI).”