

Product Requirements
Dell UPS Management Card
M2M XML based protocol to Get / Set parameters

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Revision History			
Rev.	Date	By	Description
0.1	05/15/09	L. Battini	Initial version in order to provide a M2M protocol based on XML.
1.0	10/02/10	L. Battini	Set Simple request removed (Deprecated) Disclaimer updated
1.1	03/25/10	L. Battini	Multi Set Request updated

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1. Description

The Dell UPS Management Card supports a M2M protocol that allows to "Get" and or "Set" several parameters.

The goal of this document is to describe how the parameters can be Read / Write. It also provides a list of the objects that are currently implemented.

2. Web services descriptor

This file provides information about "Card" capabilities and resources location.

It's the first entry point of the "Card".

It is accessible from the URL: "<http://<address>/product.xml>"

This is a static file (not supposed to be dynamically changed).

Note that if the security configuration can be changed by the user through the Web interface.

This file is updated accordingly...

All information about the "Card" features are stored in this file as it is described in Appendix 1.

3. Configuration descriptor

The url http://IPaddress/configuration_descriptor.xml returns all the attributes of the parameter which can be set.

Attribute	Description
Name	The object name.
Unit	The object value unit (optional).
access	The object access type (optional). RO = Read only (by default) WO = Write once RW = Read / Write access.
Value	The object value.
Restart	TRUE means that the card will restart automatically when the parameter will be set

The Appendix 2 contains the complete: configuration_descriptor.xml

4. Get & Set objects feature

The Dell UPS Management Card supports the XML protocol over HTTP or HTTPS to set parameters.

4.1. <GET_OBJECT> Service

This service downloads from the Dell UPS Management Card the values of all parameters and data inside the NMC card.

<GET_OBJECT url="**get_object.xml**" security="**none**" mode="**FORM**" /> :

Attribute	Description
url	Indicates the URL to access to the main menu.
Security	Indicates the security level available for connection. <code>none</code> : No security in subscription sequence and alarm authentication. <code>basic</code> : The client is authenticated with a login/password. <code>ssl</code> : The client is authenticated with a login/password through HTTPS connection.
Mode	Indicates the interface access mode By default use the <code>FORM</code> mode. <code>FORM</code> : The x-form-urlencoded mode used by HTTP.

4.1.1. FORM POST Mode

This mode uses the same format than a standard browser with a HTML Form does.

The "standard x-form-urlencoded" is as follow:

The POST Header has type "`content-type:application/x-form-urlencoded`"

The POST Data section is formatted like an HTTP GET request.

If nothing is specified, returns the entire database.

For example:

```
objectName=UPS.*
```

Represents objects:

```
UPS.PowerSummary.iModel
```

```
UPS.PowerSummary.iProduct
```

```
...
```

```
UPS.PowerSummary.PresentStatus.ACPresent
```

```
UPS.PowerSummary.PresentStatus.Discharging
```

```
...
```

4.1.2. Request

This service allows getting one or more objects values.

Several objects can be retrieved by a single HTTP/POST request.

The request is made with one or several object name expression.

The expression is made of an object name prefix and an optional "*" suffix.

If "*" suffix is used then the name expression represents all objects whose name begins with prefix.

Note: The "*" suffix is implemented only for "UPS.*" and "System.*" objects.

4.1.3. Answer

Server response is the same for the both mode. This is an XML file with format:

```
<?xml version='1.0'?>
<GET_OBJECT>
  < OBJECT name="Name">Value</OBJECT>
  ...
</GET_OBJECT>
```

Attribute	Description
Name	The object name.
Value	The object value.

4.2. <SET_OBJECT> Service

This service allows setting individually one or many parameters inside of the Dell UPS Management Card.

<SET_OBJECT url="Forms/set_obj_2" security="basic" mode="FORM" /> :

Attribute	Description
url	Indicates the URL to access to the main menu.
Security	Indicates the security level available for connection. Note: The security level is depending on the security mode defined using the Web interface. <i>none</i> : No security in exchange. <i>basic</i> : The client is authenticated with a login/password. <i>ssl</i> : The client is authenticated with a login/password through HTTPS connection.
Mode	Indicates the interface access mode By default use the FORM POST mode. <i>FORM</i> : The x-form-urlencoded mode used by HTTP.

4.2.1. Multi Set Request

The post use a multi-part file upload type field.

The field name is "objectList" and is define in the HTML Form as follow:

```
<INPUT type="file" name="objectList"></INPUT>
```

The posted file uses this format:

```
<SET_OBJECT>
  <OBJECT name="name">value</OBJECT>
  <OBJECT name="name">value</OBJECT>
  <OBJECT name="name">value</OBJECT>
  ...
</SET_OBJECT>
```

and must be named "**Configuration.xml**".

4.2.2. Answer

The answer is ignored in this mode. The action can be verified through the GET_OBJECT interface.

5. Appendix 1 : product.xml file

```
<?xml version="1.0" encoding="UTF-8" ?>
- <PRODUCT_INFO name="Network Management Card" type="Mosaic 4M 16M" version="01.01.007">
- <SUMMARY>
  <HTML_PROPERTIES_PAGE url="default.htm" security="none" />
  <XML_SUMMARY_PAGE url="upsprop.xml" security="none" />
  <CENTRAL_CFG url="config.xml" security="none" />
  <CSV_LOGS url="logevent.csv" dateRange="no" eventFiltering="no" security="none" />
</SUMMARY>
- <ALARMS>
  <SUBSCRIPTION url="subscribe.cgi" security="basic" />
  <BROADCAST port="4680" />
</ALARMS>
- <MANAGEMENT>
  <XML_MANAGEMENT_PAGE name="Set Card Time" id="SetTime" url="management/set_time.xml" security="none" />
  <MANAGEMENT_PAGE name="Access Control" id="AccessControl" url="ups_cont.htm" security="none" />
</MANAGEMENT>
- <UPS_DATA>
  <GET_CONFIG url="configuration_descriptor.xml" security="none" mode="FORM" />
  <SET_CONFIG url="Forms/set_obj_2" security="basic" mode="FORM" />
  <GET_OBJECT url="get_object.xml" security="none" mode="FORM" />
  <SET_OBJECT url="Forms/set_obj_1" security="basic" mode="FORM" />
</UPS_DATA>
</PRODUCT_INFO>
```

6. Appendix 2 : configuration_descriptor.xml file

```
<?xml version="1.0" encoding="UTF-8" ?>
= <SYSTEM_CONFIG version="1">
= <GROUP id="Network">
  <ITEM object="System.Network.HostName" type="String:49" access="WO" default="upsXX" restart="TRUE" version="1" />
  <ITEM object="System.Network.IPAddress" type="IPv4" access="WO" default="192.168.1.2" restart="TRUE" version="1" />
  <ITEM object="System.Network.IPMask" type="IPv4" access="RW" default="255.255.0.0" restart="TRUE" version="1" />
  <ITEM object="System.Network.IPGateway" type="IPv4" access="RW" default="0.0.0.0" restart="TRUE" version="1" />
  <ITEM object="System.Network.DomainName" type="String:49" access="RW" default="ups.domain.com" version="1" />
  <ITEM object="System.Network.DHCP" type="Boolean" access="RW" default="1" restart="TRUE" version="1" />
  <ITEM object="System.Network.PrimaryDNS" type="IPv4" access="RW" default="0.0.0.0" version="1" />
  <ITEM object="System.Network.SecondaryDNS" type="IPv4" access="RW" default="0.0.0.0" version="1" />
  <ITEM object="System.Network.SmtpServer.HostName" type="String:49" access="RW" default="smtpserver" version="1" />
  <ITEM object="System.Network.SmtpServer.Authentication" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Network.SmtpServer.Login" type="String:49" access="RW" default="smtplogin" version="1" />
  <ITEM object="System.Network.SmtpServer.Password" type="Password:49" access="RW" default="smtppwd" version="1" />
</GROUP>
= <GROUP id="System">
  <ITEM object="System.Contact" type="String:49" access="RW" default="Computer Room Manager" version="1" />
  <ITEM object="System.Location" type="String:31" access="RW" default="Computer Room" version="1" />
  <ITEM object="System.Language" type="List:AUTO,FRE,ENG,SPA,GER,ITA" access="RW" default="AUTO" version="1" />
  <ITEM object="System.History.Log.Interval" type="Time:10..2147483647" unit="s" access="RW" default="60" version="1" />
  <ITEM object="System.Environment.Log.Interval" type="Time:10..2147483647" unit="s" access="RW" default="300" version="1" />
</GROUP>
= <GROUP id="Shutdown.Outlet [1]">
  <ITEM object="System.Outlet [1].iName" type="String:20" access="RW" default="Inverter" version="1" />
  <ITEM object="System.ShutdownDuration" type="Time:120..9999" unit="s" access="RW" default="120" version="1" />
  <ITEM object="System.ShutdownTimerSelected" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.ShutdownTimer" type="Time:0..5999940/60" unit="m" access="RW" default="1800" version="1" />
  <ITEM object="System.RunTimeToEmptyLimit" type="Time:0..99999" unit="s" access="RW" default="180" version="1" />
  <ITEM object="System.RemainingCapacityLimit" type="Integer:0..100" unit="%" access="RW" default="20" version="1" />
  <ITEM object="System.RestartLevel" type="Integer:0..100" unit="%" access="RW" default="0" version="1" />
</GROUP>
= <GROUP id="Shutdown.Outlet [2]">
```

```

<ITEM object="System.Outlet[2].iName" type="String:20" access="RW" default="Load Segment1" version="1" />
<ITEM object="System.Outlet[2].ShutdownDuration" type="Time:120..9999" unit="s" access="RW" default="120" version="1" />
</GROUP>
<ITEM object="System.Outlet[2].ShutdownTimer" type="Time:0..99999" unit="s" access="RW" default="1920" version="1" />
<ITEM object="System.Outlet[2].StartupTimer" type="Time:0..65535" unit="s" access="RW" default="3" version="1" />
  <ITEM object="System.Outlet[2].RemainingCapacityLimit" type="Integer:0..100" unit="%" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Shutdown.Outlet[3]">
  <ITEM object="System.Outlet[3].iName" type="String:20" access="RW" default="Load Segment2" version="1" />
  <ITEM object="System.Outlet[3].ShutdownDuration" type="Time:120..9999" unit="s" access="RW" default="120" version="1" />
  </GROUP>
  <ITEM object="System.Outlet[3].ShutdownTimer" type="Time:0..99999" unit="s" access="RW" default="1920" version="1" />
  <ITEM object="System.Outlet[3].StartupTimer" type="Time:0..65535" unit="s" access="RW" default="6" version="1" />
  <ITEM object="System.Outlet[3].RemainingCapacityLimit" type="Integer:0..100" unit="%" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Control.Outlet[1]" hidden="TRUE">
  <ITEM object="System.Outlet[1].OffDelay" type="Time:0..99999" access="RW" default="0" version="1" />
  <ITEM object="System.Outlet[1].Toggle" type="Time:0..99999" access="RW" default="0" version="1" />
  <ITEM object="System.Outlet[1].OnDelay" type="Time:0..99999" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Control.Outlet[2]" hidden="TRUE">
  <ITEM object="System.Outlet[2].OffDelay" type="Time:0..99999" access="RW" default="0" version="1" />
  <ITEM object="System.Outlet[2].Toggle" type="Time:0..99999" access="RW" default="0" version="1" />
  <ITEM object="System.Outlet[2].OnDelay" type="Time:0..99999" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Control.Outlet[3]" hidden="TRUE">
  <ITEM object="System.Outlet[3].OffDelay" type="Time:0..99999" access="RW" default="0" version="1" />
  <ITEM object="System.Outlet[3].Toggle" type="Time:0..99999" access="RW" default="0" version="1" />
  <ITEM object="System.Outlet[3].OnDelay" type="Time:0..99999" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Access">
  <ITEM object="System.Login" type="String:10" access="RW" default="admin" version="1" />
  <ITEM object="System.Password" type="Password:10" access="RW" default="admin" version="1" />
  <ITEM object="System.Security" type="List:1,2,3" access="RW" default="1" restart="TRUE" version="1" />
  <ITEM object="System.FirmwareUpgrade" type="Boolean" access="RW" default="1" version="1" />
  <ITEM object="System.Network.SNMP.ReadCommunity" type="String:49" access="RW" default="public" version="1" />
  <ITEM object="System.SNMP" type="Boolean" access="RW" default="1" restart="TRUE" version="1" />
</GROUP>
- <GROUP id="Email.Common">
  <ITEM object="System.Email.Sender" type="String:59" access="RW" default="ups@domain.com" version="1" />
  <ITEM object="System.Email.Subject" type="String:40" access="RW" default="Network Management Card" version="1" />
  <ITEM object="System.Email.UPSName" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email.Message" type="String:255" access="RW" default="Type here your own text" version="1" />
  <ITEM object="System.Email.Localization" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email.EventName" type="Boolean" access="RW" default="1" version="1" />
</GROUP>
- <GROUP id="Email.Email[0]">
  <ITEM object="System.Email[0].Recipient" type="Email:99" access="RW" default="recipient1@domain.com" version="1" />
  <ITEM object="System.Email[0].Selected" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Enotify" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Measures.Log" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Events.Log" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].SystemEvents.Log" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Environment.Log" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Report.Periodicity" type="Time:0..8553600/86400" unit="d" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Report.Hour" type="Time:0..86399/3600" unit="h" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].Report.Next" type="Time:0..2678400/86400" unit="d" access="RW" default="0" version="1" />
  </GROUP>
  <ITEM object="System.Email[0].EventList.Discharging" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].EventList.ACPresent" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].EventList.RunTimeToShutdown" type="Boolean" access="RW" default="1" version="1" />
  <ITEM object="System.Email[0].EventList.BelowRemainingCapacityLimit" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].EventList.NeedReplacement.1" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Email[0].EventList.NeedReplacement.0" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Security.Email[0].EventList.Overload[1].OverThreshold.1" type="Boolean" access="RW" default="0" version="1" />
  <ITEM object="System.Security.Email[0].EventList.Overload[1].OverThreshold.0" type="Boolean" access="RW" default="0" version="1" />

```



```

<ITEM object="System.Email[0].EventList.Overload[2].OverThreshold.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.Overload[2].OverThreshold.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.Overload.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.Overload.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.InternalFailure.1" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[0].EventList.InternalFailure.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.CommunicationLost.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.CommunicationLost.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.Charger.InternalFailure" type="Boolean" access="RW" default="0" version="1"
/>
<ITEM object="System.Email[0].EventList.Input[2].Used.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.Input[2].Used.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.PowerModule.RedundancyLost.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.PowerModule.RedundancyLost.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.PowerModule.ProtectionLost.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.PowerModule.ProtectionLost.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.FirmwareUpgrade" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[0].EventList.Environment.CommunicationLost" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[0].EventList.Environment.Notify" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Email.Email[1]">
<ITEM object="System.Email[1].Recipient" type="Email:99" access="RW" default="recipient2@domain.com" version="1" />
<ITEM object="System.Email[1].Selected" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].Enotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].Measures.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].Events.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].SystemEvents.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].Environment.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].Report.Periodicity" type="Time:0..8553600/86400" unit="d" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].Report.Hour" type="Time:0..86399/3600" unit="h" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].Report.Next" type="Time:0..2678400/86400" unit="d" access="RW" default="0" version="1"
/>
<ITEM object="System.Email[1].EventList.Discharging" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.ACPresent" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.RunTimeToShutdown" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[1].EventList.BelowRemainingCapacityLimit" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.NeedReplacement.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.NeedReplacement.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.Overload[1].OverThreshold.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.Overload[1].OverThreshold.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.Overload[2].OverThreshold.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.Overload[2].OverThreshold.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.Overload.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.Overload.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.InternalFailure.1" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[1].EventList.InternalFailure.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.CommunicationLost.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.CommunicationLost.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.Charger.InternalFailure" type="Boolean" access="RW" default="0" version="1"
/>
<ITEM object="System.Email[1].EventList.Input[2].Used.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.Input[2].Used.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.PowerModule.RedundancyLost.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.PowerModule.RedundancyLost.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.PowerModule.ProtectionLost.1" type="Boolean" access="RW" default="0"
version="1" />

```

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<ITEM object="System.Email[1].EventList.PowerModule.ProtectionLost.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.FirmwareUpgrade" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[1].EventList.Environment.CommunicationLost" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[1].EventList.Environment.Notify" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Email.Email[2]">
<ITEM object="System.Email[2].Recipient" type="Email:99" access="RW" default="recipient3@domain.com" version="1" />
<ITEM object="System.Email[2].Selected" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].Enotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].Measures.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].Events.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].SystemEvents.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].Environment.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].Report.Periodicity" type="Time:0..8553600/86400" unit="d" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].Report.Hour" type="Time:0..86399/3600" unit="h" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].Report.Next" type="Time:0..2678400/86400" unit="d" access="RW" default="0" version="1"
/>
<ITEM object="System.Email[2].EventList.Discharging" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.ACPresent" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.RunTimeToShutdown" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[2].EventList.BelowRemainingCapacityLimit" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.NeedReplacement.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.NeedReplacement.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.Overload[1].OverThreshold.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.Overload[1].OverThreshold.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.Overload[2].OverThreshold.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.Overload[2].OverThreshold.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.Overload.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.Overload.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.InternalFailure.1" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[2].EventList.InternalFailure.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.CommunicationLost.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.CommunicationLost.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.Charger.InternalFailure" type="Boolean" access="RW" default="0" version="1"
/>
<ITEM object="System.Email[2].EventList.Input[2].Used.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.Input[2].Used.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.PowerModule.RedundancyLost.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.PowerModule.RedundancyLost.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.PowerModule.ProtectionLost.1" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.PowerModule.ProtectionLost.0" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.FirmwareUpgrade" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[2].EventList.Environment.CommunicationLost" type="Boolean" access="RW" default="0"
version="1" />
<ITEM object="System.Email[2].EventList.Environment.Notify" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Email.Email[3]">
<ITEM object="System.Email[3].Recipient" type="Email:99" access="RW" default="recipient4@domain.com" version="1" />
<ITEM object="System.Email[3].Selected" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].Enotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].Measures.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].Events.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].SystemEvents.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].Environment.Log" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].Report.Periodicity" type="Time:0..8553600/86400" unit="d" access="RW" default="0"
version="1" />
<ITEM object="System.Email[3].Report.Hour" type="Time:0..86399/3600" unit="h" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].Report.Next" type="Time:0..2678400/86400" unit="d" access="RW" default="0" version="1"
/>
<ITEM object="System.Email[3].EventList.Discharging" type="Boolean" access="RW" default="0" version="1" />

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<ITEM object="System.Email[3].EventList.ACPresent" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.RunTimeToShutdown" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[3].EventList.BelowRemainingCapacityLimit" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.NeedReplacement.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.NeedReplacement.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.Overload[1].OverThreshold.1" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.Overload[1].OverThreshold.0" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.Overload[2].OverThreshold.1" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.Overload[2].OverThreshold.0" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.Overload.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.Overload.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.InternalFailure.1" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.Email[3].EventList.InternalFailure.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.CommunicationLost.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.CommunicationLost.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.Charger.InternalFailure" type="Boolean" access="RW" default="0" version="1"
  />
<ITEM object="System.Email[3].EventList.Input[2].Used.1" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.Input[2].Used.0" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.PowerModule.RedundancyLost.1" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.PowerModule.RedundancyLost.0" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.PowerModule.ProtectionLost.1" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.PowerModule.ProtectionLost.0" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.FirmwareUpgrade" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.Email[3].EventList.Environment.CommunicationLost" type="Boolean" access="RW" default="0"
  version="1" />
<ITEM object="System.Email[3].EventList.Environment.Notify" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
= <GROUP id="Schedule">
<ITEM object="System.Schedule[0].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[0].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[1].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[1].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[2].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[2].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[3].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[3].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[4].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[4].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[5].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[5].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[6].Off" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
<ITEM object="System.Schedule[6].On" type="Time:-1..86399/1800" unit="h" access="RW" default="-1" version="1" />
</GROUP>
= <GROUP id="NetworkManagementSystem[0]">
<ITEM object="System.NetworkManagementSystem[0].Name" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[0].HostName" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[0].TrapCommunity" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[0].TrapSeverity" type="List:1,2,3" access="RW" default="1" version="1"
  />
</GROUP>
= <GROUP id="NetworkManagementSystem[1]" hidden="TRUE">
<ITEM object="System.NetworkManagementSystem[1].Name" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[1].HostName" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[1].TrapCommunity" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[1].TrapSeverity" type="List:1,2,3" access="RW" default="1" version="1"
  />
</GROUP>
= <GROUP id="NetworkManagementSystem[2]" hidden="TRUE">
<ITEM object="System.NetworkManagementSystem[2].Name" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[2].HostName" type="String:49" access="RW" default="" version="1" />
<ITEM object="System.NetworkManagementSystem[2].TrapCommunity" type="String:49" access="RW" default="" version="1" />

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<ITEM object="System.NetworkManagementSystem[2].TrapSeverity" type="List:1,2,3" access="RW" default="1" version="1"
/>
</GROUP>
- <GROUP id="ClientCfg" hidden="TRUE">
<ITEM object="System.ClientCfg.ShutdownTimer.Select" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="System.ClientCfg.ShutdownTimer" type="Integer:0..599940" access="RW" default="1800" version="1" />
<ITEM object="System.ClientCfg.ShutdownDuration" type="Integer:0..9999" access="RW" default="120" version="1" />
<ITEM object="System.ClientCfg.BroadcastAdmins" type="Boolean" access="RW" default="1" version="1" />
<ITEM object="System.ClientCfg.BroadcastUsers" type="Boolean" access="RW" default="1" version="1" />
</GROUP>
- <GROUP id="Environment.Temperature">
<ITEM object="Environment.iName" type="String:30" access="RW" default="Environment sensor" version="1" />
<ITEM object="Environment.Temperature.Unit" type="List:C,F:$TUnit" access="RW" default="C" version="1" />
<ITEM object="Environment.Temperature.HighThreshold" type="Integer:$TLow..70:$THigh" unit="$TUnit" access="RW"
default="40" version="1" />
<ITEM object="Environment.Temperature.LowThreshold" type="Integer:0..$THigh:$TLow" unit="$TUnit" access="RW"
default="5" version="1" />
<ITEM object="Environment.Temperature.Hysteresis" type="Integer:0..5" unit="$TUnit" access="RW" default="2"
version="1" />
<ITEM object="Environment.Temperature.Offset" type="Float:-5..5" unit="$TUnit" access="WO" default="0" version="1" />
<ITEM object="Environment.Temperature.HighNotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Temperature.LowNotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Temperature.HighShutdown" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Temperature.LowShutdown" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Environment.Humidity">
<ITEM object="Environment.Humidity.HighThreshold" type="Integer:$HLow..100:$HHigh" unit="%" access="RW" default="90"
version="1" />
<ITEM object="Environment.Humidity.LowThreshold" type="Integer:0..$HHigh:$HLow" unit="%" access="RW" default="5"
version="1" />
<ITEM object="Environment.Humidity.Hysteresis" type="Integer:0..10" unit="%" access="RW" default="5" version="1" />
<ITEM object="Environment.Humidity.Offset" type="Float:-10..10" unit="%" access="WO" default="0" version="1" />
<ITEM object="Environment.Humidity.HighNotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Humidity.LowNotify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Humidity.HighShutdown" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Humidity.LowShutdown" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Environment.Input[1]">
<ITEM object="Environment.Input[1].iName" type="String:28" access="RW" default="Input #1" version="1"
/>
<ITEM object="Environment.Input[1].State[0].Description" type="String:20" access="RW" default="open" version="1" />
<ITEM object="Environment.Input[1].State[0].Notify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Input[1].State[0].Shutdown" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Input[1].State[1].Description" type="String:20" access="RW" default="closed" version="1" />
<ITEM object="Environment.Input[1].State[1].Notify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Input[1].State[1].Shutdown" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Environment.Input[2]">
<ITEM object="Environment.Input[2].iName" type="String:28" access="RW" default="Input #2" version="1" />
<ITEM object="Environment.Input[2].State[0].Description" type="String:20" access="RW" default="open" version="1" />
<ITEM object="Environment.Input[2].State[0].Notify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Input[2].State[0].Shutdown" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Input[2].State[1].Description" type="String:20" access="RW" default="closed" version="1" />
<ITEM object="Environment.Input[2].State[1].Notify" type="Boolean" access="RW" default="0" version="1" />
<ITEM object="Environment.Input[2].State[1].Shutdown" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
- <GROUP id="Time">
<ITEM object="System.TimeSync" type="List:MANUAL,AUTO,NTP" access="RW" default="AUTO" version="1" />
<ITEM object="System.Time" hidden="TRUE" type="Time:0..2147483647" access="RW" default="0" version="1" />
<ITEM object="System.TimeNtp" type="String:49" access="RW" default="ntpserver" version="1" />
<ITEM object="System.TimeZone" type="List:-43200,-39600,-36000,-32400,-28800,-25200,-21600,-18000,-14400,-10800,-
7200,-3600,0,3600,7200,10800,14400,18000,21600,25200,28800,32400,36000,39600,43200" access="RW"
default="0"
version="1" />
<ITEM object="System.TimeDaylight" type="Boolean" access="RW" default="0" version="1" />
</GROUP>
</SYSTEM_CONFIG>

```

7. Appendix 3 : upsprop.xml file

```
<?xml version="1.0" encoding="UTF-8" ?>
<SUMMARY Version="2.0" xmlns="">
<OBJECT name="UPS.PowerSummary.iProduct">UPS LI</OBJECT>
<OBJECT name="UPS.PowerSummary.iModel">T 1920</OBJECT>
<OBJECT name="UPS.PowerSummary.iSerialNumber">11-111111-11111-111-1111-111</OBJECT>
<OBJECT name="UPS.PowerSummary.iVersion">00.01.0019</OBJECT>
<OBJECT name="UPS.PowerSummary.RunTimeToEmpty">22050</OBJECT>
<OBJECT name="UPS.PowerSummary.RemainingCapacity">95</OBJECT>
<OBJECT name="UPS.PowerSummary.RemainingCapacityLimit">30</OBJECT>
<OBJECT name="UPS.PowerSummary.PercentLoad">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.CommunicationLost">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.NeedReplacement">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.Discharging">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.ACPresent">1</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.Overload">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.Good">1</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.BelowRemainingCapacityLimit">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.InternalFailure">0</OBJECT>
<OBJECT name="UPS.PowerSummary.PresentStatus.ShutdownImminent">0</OBJECT>
<OBJECT name="UPS.PowerSummary.DelayBeforeShutdown">-1</OBJECT>
<OBJECT name="UPS.PowerSummary.DelayBeforeStartup">-1</OBJECT>
<OBJECT name="UPS.Flow[4].ConfigApparentPower">1920</OBJECT>
<OBJECT name="UPS.PowerConverter.Input[2].PresentStatus.Used">0</OBJECT>
<OBJECT name="UPS.PowerConverter.Input[4].PresentStatus.Used">0</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[1].iName">@@ UPS</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[1].PresentStatus.Switchable">0</OBJECT>
<OBJECT name="System.ShutdownDuration">120</OBJECT>
<OBJECT name="System.RunTimeToShutdown">2147483647</OBJECT>
<OBJECT name="System.Outlet[2].RunTimeToShutdown">2147483647</OBJECT>
<OBJECT name="System.Outlet[3].RunTimeToShutdown">2147483647</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[2].iName">@@ LS1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[2].DelayBeforeShutdown">-1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[2].PresentStatus.Switchable">1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[2].PresentStatus.SwitchOnOff">1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[2].RemainingCapacityLimit">0</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[2].ShutdownTimer">2147483647</OBJECT>
<OBJECT name="System.Outlet[2].ShutdownDuration">120</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[3].iName">@@ LS2</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[3].DelayBeforeShutdown">-1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[3].PresentStatus.Switchable">1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[3].PresentStatus.SwitchOnOff">1</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[3].RemainingCapacityLimit">0</OBJECT>
<OBJECT name="UPS.OutletSystem.Outlet[3].ShutdownTimer">2147483647</OBJECT>
<OBJECT name="System.Outlet[3].ShutdownDuration">120</OBJECT>
<OBJECT name="System.Description">Dell UPS Tower 1920W</OBJECT>
<OBJECT name="System.Bitmap">Dell2700R.jpg</OBJECT>
<OBJECT name="System.Location">Room DELL</OBJECT>
<OBJECT name="System.Contact">Pierre</OBJECT>
<OBJECT name="System.LastAcquisition">2009/05/15 11:24:40</OBJECT>
</SUMMARY>
```