



CHAPTER 23

Adding External Launch Points

This chapter describes the External Launch application and the steps that are involved in adding the launch point. It contains the following information:

- [About the External Launch Application, page 23-1](#)
- [Adding an External Application Launch Point, page 23-1](#)
- [Deleting an External Application Launch Point, page 23-8](#)
- [Sample BQL Scripts to Launch External Applications, page 23-8](#)

About the External Launch Application

Cisco ANA allows you to launch an external application from the Cisco ANA client. You can add the required launch points to the network elements, Links, Tickets and Events. You can launch them from the Network Visions inventory tree, map view, links view, and tickets table, and from the Event Vision for any type of event. The launch point, when double-clicked, invokes a batch file that you write to define the application or command that you want to launch.

The scripts or batch files that are used while invoking an external application should reside on the Cisco ANA client machine or should be accessible from the client. If you want to launch an application as part of an external launch point, then it should reside on the Cisco ANA client machine.

You must have Configurator or higher privileges to add a launch point. After you add an external launch point, the site.xml file is updated on the Cisco ANA gateway. All Cisco ANA clients that connect to a Cisco ANA gateway server can use the external launch points that are included in the site.xml file of that gateway.

Adding an External Application Launch Point

Adding an external launch point involves the following steps:

1. [Identifying the IMO Context and Properties, page 23-2](#)
2. [Creating BQL Scripts, page 23-2](#)
3. [Running BQL Scripts, page 23-6](#)

Identifying the IMO Context and Properties

To identify the IMO context and properties:

-
- Step 1** Select a network element from the Tree pane.
 - Step 2** Press **F2**. The All Properties viewer appears in a separate window.
 - Step 3** Make a note of the IMO type. If you are in the Map pane, you should make a note of the IMO type that is part of ContainedIMO and not part of IHierarchyNode; for example, IPortConnector or IManagedElement.

Example 1: Identifying IManagedElement in the Tree pane:

```
com.sheer.imo.IManagedElement
{ [ManagedElement (Key=ana7609-1)] }
```

Example 2: Identifying IPortConnector in the Tree pane:

```
com.sheer.imo.IPortConnector
{ [ManagedElement (Key=ana7609-1)] [PhysicalRoot] [Chassis] [Slot (SlotNum=5)] [Module] [Port (Port
Number=GigabitEthernet5/1 - Missing Pluggable Port)] }
```

Example 3: Identifying IManagedElement in the Map pane:

```
{ [HierarchyNode (Id=1001)] [ContainedImo]
  key=Imo, value=com.sheer.imo.IManagedElement
  { [ManagedElement (Key=ana7609-1)] }
```

- Step 4** Make a note of the property key name; for example, in IManagedElement write down IP; in IPortConnector write down PortAlias.

Example 1: IManagedElement

```
key=DeviceName, value=ana7609-1
key=IP, value=172.20.68.72
```

Example 2: IPortConnector

```
key=Location, value=5.GigabitEthernet5/1 - Missing Pluggable Port
key=PortAlias, value=GigabitEthernet5/1 - Missing Pluggable Port
```

Creating BQL Scripts

Read [Cisco Active Network Abstraction Integration Developer Guide](#) for an understanding of Broadband Query Language (BQL), and as a prerequisite to understanding this section.



Note

You cannot get a list of all external launch application points that you have created in the Cisco ANA. The Configurator must make a note of all IMO contexts, where the launch points are defined to perform update or delete tasks.

[Table 23-1](#) describes the format and syntax that you must follow while writing the BQL **set** command to launch an external application:

Table 23-1 BQL Command Format and Syntax

Property	Type	Value	Description
management.IExternalLaunch			
ID	OID	<p>Examples:</p> <p>For network elements:</p> <pre>{ [ExternalLaunch (ContextImoType=com.s heer.imo.IManagedElement) (Name=exampl e1)] }</pre> <p>For tickets:</p> <pre>{ [ExternalLaunch (ContextImoType=Conte xtImoType=com.sheer.imo.newalarm.ITic ket) (Name=example36)] }</pre>	<p>The OID contains the context of the external launch point and a unique name of the external launch point.</p> <p>It defines the IMO type on which the external launch application is invoked.</p> <p>The following IMO types are supported:</p> <ul style="list-style-type: none"> • IManagedElement—Network elements. • IEvent (or any other sub-type, like ISyslogAlarm)—Events and their sub types. • ITicket —Tickets. • ITopologicalLink—Links.
Filter tags	String	<p>Example:</p> <p>To filter by vendor name:</p> <pre><Vendor type="String">Cisco</Vendor></pre> <p>To filter by LatestState:</p> <pre><LatestState type="String">Down</LatestState></pre>	<p>Allow you to set filters for the external launch commands. The following filter tags are supported for the IMOs.</p> <ul style="list-style-type: none"> • IManagedElement—ElementType, Vendor • IEvent (or sub-type)—Description, State • ITicket—LatestState • ITopologicalLink—LinkType.
ExternalBatchToExecute	String	<p>Examples:</p> <ul style="list-style-type: none"> • Specifying a batch file: <pre><ExternalBatchToExecute type="String">C:\runthis.bat</ExternalBatchToExecute></pre> • Specifying a URL: <pre><ExternalBatchToExecute type="String">http://www.cisco.com</ExternalBatchToExecute></pre> • Passing an environment variable: <pre><ExternalBatchToExecute type="String">%java_home%\bin\javadoc </ExternalBatchToExecute></pre> 	<p>Defines the executable steps or batch file details to be invoked. You:</p> <ul style="list-style-type: none"> • Must specify the parameters as an array while using a script. • Cannot pass any parameters in the URL. You must use batch files to pass the parameters. • Can include more commands as part of a batch file. • Can include an environment variable while invoking the batch file. <p>To define a string that represents the URL or Script which is executed along with its parameters, use the LinetoExecute property.</p>

Table 23-1 BQL Command Format and Syntax (continued)



Property	Type	Value	Description
LineToExecute	String	<p>Example:</p> <p>To launch a URL with parameters as Gateway IP, the network element IP, and the logged-in user name, using / as delimiter:</p> <pre><LineToExecute type="String">http://url.example.com/\$GW\$ /\$com.sheer.imo.IManagedElement.IP\$/USER NAME\$</LineToExecute></pre>	<p>Defines a string that represents the URL or Script which is executed along with its parameters.</p> <p>The syntax includes:</p> <ul style="list-style-type: none"> • \$—Used when you specify an IMO property definition. • ~—Used when you specify a Soft Property definition. • \$number\$—The parameter whose index is a number. • \$USERNAME\$—The logged-in username. • \$GW\$ —The ANA Gateway IP address. <p> Note The & character should be written as &amp; when used inside a BQL command.</p>
MenuCaption	String	<p>Example:</p> <pre><MenuCaption type="String">ping</MenuCaption></pre>	<p>The string that is displayed as menu when launching the application.</p> <p> Note If you have underscore (_) characters in the string, the first underscore is removed from the menu item name. This is to facilitate the ability to add a mnemonic notation to the user-defined external launch menus. The first _ character is considered as a mark for the mnemonic character. For example, if _scripts is specified as the menu caption, the result will be having the menu caption as <u>s</u>cripts, where <u>s</u> is the mnemonic.</p>
MenuPath	String	<p>Example:</p> <pre><MenuPath type="String">external launch demo</MenuPath></pre>	<p>The string that is displayed as menu path when launching the application. You can have a sub-menu separated by a forward slash (/).</p>

Table 23-1 BQL Command Format and Syntax (continued)

Property	Type	Value	Description
Parameters	IMObjects _Array	<code><Parameters type="IMObjects_Array"></code>	All external launch parameters must be passed in an array. See management.IExternalLaunchParameter , page 23-5.
management.IExternalLaunchParameter			
ID	OID	<code>{[ExternalLaunchParameter(Index=1)]}</code>	Index value defines the order in which the command must be invoked.
IMOType	String	<p>Example 1:</p> <pre><IMOType type="String">com.sheer.imo.IPortConnector</IMOType></pre> <p>Example 2:</p> <pre><IMOType type="String">com.sheer.imo.newalarm.ITicket</IMOType></pre>	<p>Defines the IMO context type. You can also leave this field empty.</p> <p>You can pass the parameter not only from the IMO and its parent on which you set the menu but also from the IMO tree up to IManagedElement. It can be the parent or the higher level IMO depending on the IMO that you have selected for your menu.</p>
PropertyName	String	<p>Example 1:</p> <pre><PropertyName type="String">PortAlias</PropertyName></pre> <p>Example 2</p> <pre><PropertyName type="String">LatestState</PropertyName></pre>	<p>Defines the IMO key name within the IMO context type. This value is used by the script while invoking the application.</p> <p>You can also have any constant value.</p> <p>For details about adding Soft Property parameters, see Defining Soft Property Parameters.</p>
RunSingleCommand	Boolean	<p>Example:</p> <pre><RunSingleCommand type="boolean">true</RunSingleCommand></pre> <p>The script will be called once, with the required properties of all selected IMOs passed in one go.</p>	<p>If the value is set to true, a single script will be run for all the selected objects. If set to false, a script will be run for each of the selected objects.</p>

Defining Soft Property Parameters

You can use a soft property as a parameter in an external launch BQL command.

To define a soft property parameter you need to write the soft property name (not the label) in the PropertyName entry, and add the following entry to the parameter definition:

```
<SoftProperty type="boolean">true</SoftProperty>
```

If you do not add this entry, by default the value is assumed to be false. There is backward compatibility for commands that do not have this parameter. For an example of a BQL script that includes soft property parameters, see [Example 3](#), page 23-10.

Parameters that have the value true for the soft property entry are not validated in the definition of the command. This is because there is no means to discover whether the IMO on which the command is run has the soft property defined on it.

The launch point will be visible even if the IMO does not have the soft property defined on it. In the case when a soft property is not defined, an appropriate message is displayed, but, only after the command is run. This is to avoid running an additional command on the server only to decide whether to make the command visible or not.

Running BQL Scripts

See [Cisco Active Network Abstraction Integration Developer Guide](#) to understand how to run a BQL script.

Launching an External Application

To launch an external application:

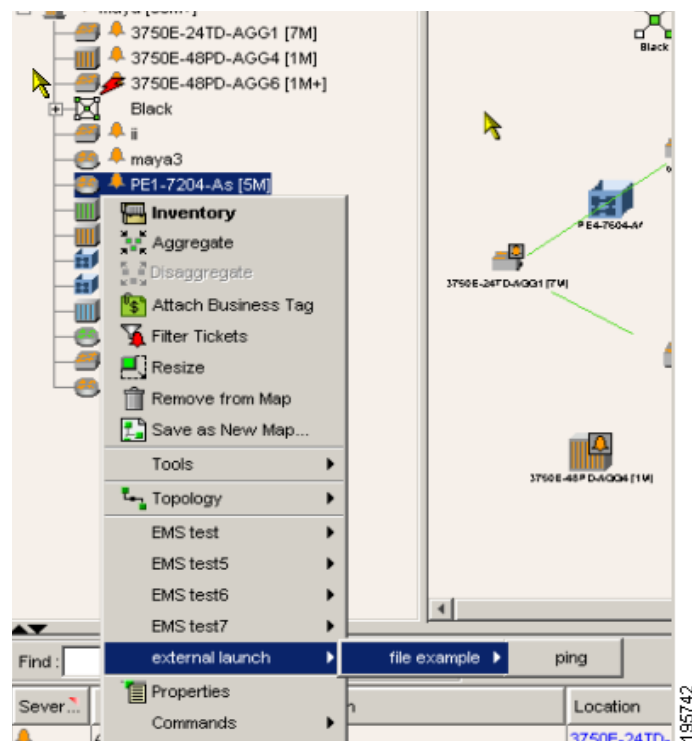
- Step 1** Log in to Cisco ANA NetworkVision.
- Step 2** Navigate to the IMO context(s) where you have added the external application launch point.
- You can select multiple objects and do either of the following:
- Execute one script with the multiple selected objects
 - Execute a script for each of the selected objects.

To do this you need to modify the `RunSingleCommand` property in the BQL script. See [Table 23-1](#) for details.

- Step 3** Right-click and launch the menu item you created.

[Figure 23-1](#) illustrates an external launch point named `ping`.

Figure 23-1 External Application Launch Point Example



Note

In the output, all the properties that were defined in the script will appear with delimiters " ". This is to support the properties that include spaces. The behavior was different in Cisco ANA 3.6.x.

Deleting an External Application Launch Point

You can delete the external application launch point using the BQL **Delete** command.


Note

See [Cisco Active Network Abstraction Integration Developer Guide](#) for an understanding of BQL, and as a prerequisite to understanding this section.

To delete the launch point:

Step 1 Create a BQL script with the **Delete** command as shown below:

```
<?xml version="1.0" encoding="UTF-8"?>
<command name="Delete">
  <param name="oid">
    <value>
      <management.IExternalLaunch>
        <ID type="Oid">{ [ExternalLaunch (ContextImoType=com.sheer.imo.IPortConnector
          ) (Name=example4) ]}</ID>
      </management.IExternalLaunch>
    </value>
  </param>
</command>
```

Step 2 Run the BQL script.

Step 3 Launch Cisco ANA NetworkVision to verify that the launch point has been removed.

Sample BQL Scripts to Launch External Applications

The following sections contains the BQL script samples to launch an external application using BQL:


Note

See [BQL Command Format and Syntax](#) for details on the syntax used in the commands.

- [Example 1](#)—Running a single script on the selected tickets with their latest state and last modification time as parameters.
- [Example 2](#)—Running a single script on the selected tickets with their latest state and last modification time as parameters, for tickets that include Layer 2 in their description
- [Example 3](#)—Including a soft property parameter in a BQL command for an external launch point on a network element
- [Example 4](#)—Using a Batch File to Invoke an Application
- Execute c:/script.batch with parameters PortAlias and the logged-in user name.
- [Example 5](#)—Using a URL to Invoke an Application
- [Example 6](#)—Launch a URL with parameters values Gateway IP, the Network Element IP and the logged-in user name, using / as delimiter
- [Example 7](#)—Launch a URL with parameters a, b and c whose values are the Soft property showClock, a constant string "constant" and the logged-in user name.

- [Example 8](#)—Launch a URL with parameters a, b, c and d whose values are the IMO property IP, property PortAlias, a constant string "any_const_parameter", and the logged-in user name, using the existing Parameters element.
- [Example 9](#)—Using an Environment Variable to Invoke an Application
- [Example 10](#)—Using Multiple IMO Contexts to Launch an Application
- [Sample Batch Files](#)

For details about the format and the syntax of the BQL script, see [Creating BQL Scripts, page 23-2](#).

**Note**

<param name = "replace"> is always set to **true**. This value replaces the old value with the new value based on the script that is invoked.

Example 1

Running a single script on the selected tickets with their latest state and last modification time as parameters.

```
<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>

          <ID type="Oid">{[ExternalLaunch(ContextImoType=com.sheer.imo.newalarm.ITicket
            )(Name=print state)]}</ID>
          <ExternalBatchToExecute type="String">C:\script.bat</ExternalBatchToExecute>
          <MenuCaption type="String">Print state</MenuCaption>
          <MenuPath type="String">My apps</MenuPath>
          <Parameters type="IMObjects_Array">
            <management.IExternalLaunchParameter>
              <ID type="Oid">{[ExternalLaunchParameter(Index=1)]}</ID>
              <IMObjectType type="String">com.sheer.imo.newalarm.ITicket</IMObjectType>
              <PropertyName type="String">LatestState</PropertyName>
            </management.IExternalLaunchParameter>
            <management.IExternalLaunchParameter>
              <ID type="Oid">{[ExternalLaunchParameter(Index=2)]}</ID>
              <IMObjectType type="String">com.sheer.imo.newalarm.ITicket</IMObjectType>
              <PropertyName type="String">LastModificationTime</PropertyName>
            </management.IExternalLaunchParameter>
          </Parameters>
          <RunSingleCommand type="boolean">true</RunSingleCommand>
        </management.IExternalLaunch>
      </value>
    </param>
    <param name="replace">
      <value>true</value>
    </param>
  </command>
```

Example 2

Running a single script on the selected tickets with their latest state and last modification time as parameters, for tickets that include Layer 2 in their description

```
<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>
```

```

    <ID type="Oid">{ [ExternalLaunch (ContextImoType=com.sheer.imo.newalarm.ITicket)
      (Name=print state) ] }</ID>
  <ExternalBatchToExecute type="String">C:\script.bat</ExternalBatchToExecute>
    <LatestState type="String">Layer 2</LatestState>
  <MenuCaption type="String">Print state</MenuCaption>
  <MenuPath type="String">My apps</MenuPath>
  <Parameters type="IMObjects_Array">
    <management.IExternalLaunchParameter>
      <ID type="Oid">{ [ExternalLaunchParameter (Index=1) ] }</ID>
      <IMObjectType type="String">com.sheer.imo.newalarm.ITicket</IMObjectType>
      <PropertyName type="String">LatestState</PropertyName>
    </management.IExternalLaunchParameter>
    <management.IExternalLaunchParameter>
      <ID type="Oid">{ [ExternalLaunchParameter (Index=2) ] }</ID>
      <IMObjectType type="String">com.sheer.imo.newalarm.ITicket</IMObjectType>
      <PropertyName type="String">LastModificationTime</PropertyName>
    </management.IExternalLaunchParameter>
  </Parameters>
  <RunSingleCommand type="boolean">true</RunSingleCommand>
</management.IExternalLaunch>
</value>
</param>
<param name="replace">
  <value>true</value>
</param>
</command>

```

Example 3

Including a soft property parameter in a BQL command for an external launch point on a network element:

```

<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>
        <ID type="Oid">{ [ExternalLaunch (ContextImoType=com.sheer.imo.IManagedElement)
          (Name=InfoVista-Launch-test-2) ] }</ID>
        <ElementType type="String">Cisco 7206VXR</ElementType>
        <ExternalBatchToExecute
          type="String">C:/IV/launch-report.bat</ExternalBatchToExecute>
        <MenuCaption type="String">test4</MenuCaption>
        <MenuPath type="String">Performance/Test4</MenuPath>
        <Parameters type="IMObjects_Array">
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=1) ] }</ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">showClock</PropertyName>
            <SoftProperty type="boolean">true</SoftProperty>
          </management.IExternalLaunchParameter>
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=2) ] }</ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">IP</PropertyName>
            <SoftProperty type="boolean">>false</SoftProperty>
          </management.IExternalLaunchParameter>
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=3) ] }</ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">ElementTypeKey</PropertyName>
          </management.IExternalLaunchParameter>
        </Parameters>
      </management.IExternalLaunch>
    </value>
  </param>
</command>

```

```

        </management.IExternalLaunchParameter>
    </Parameters>
    <Vendor type="String">Cisco</Vendor>
</management.IExternalLaunch>
</value>
</param>
<param name="replace">
<value>>true</value>
</param>
</command>

```

Example 4

Using a Batch File to Invoke an Application

```

<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>

        <ID type="Oid">{ [ExternalLaunch(ContextImoType=com.sheer.imo.IManagedElement) (Name=example1)] }</ID>
        <ElementType type="String">Cisco</ElementType>
        <Vendor type="String">Cisco</Vendor>
        <ExternalBatchToExecute
          type="String">C:\runthis.bat</ExternalBatchToExecute>
        <MenuCaption type="String">ping</MenuCaption>
        <MenuPath type="String">external launch/file example</MenuPath>
        <Parameters type="IMObjects_Array">
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter(Index=1)] }</ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">IP</PropertyName>
          </management.IExternalLaunchParameter>
        </Parameters>
      </management.IExternalLaunch>
    </value>
  </param>
  <param name="replace">
    <value>true</value>
  </param>
</command>

```

Example 5

Execute a script `C:/script.batch` with parameters `PortAlias` and the logged-in user name.

```

<?xml version="1.0" encoding="UTF-8"?
<command name="Set"
  <param name="imo">
    <value>
      <management.IExternalLaunch>
        <ID type="Oid">{ [ExternalLaunch(ContextImoType=com.sheer.imo.IPortConnector) (Name=example)] }</ID>
        <MenuCaption type="String">My Example</MenuCaption>
        <MenuPath type="String">My Menu/My Sub Menu</MenuPath>
        <LineToExecute type="String">c:/script.batch
          $com.sheer.imo.IPortConnector.PortAlias $USERNAME$</LineToExecute>
      </management.IExternalLaunch>
    </value>
  </param>

```

```

    <param name="replace">
      <value>true</value>
    </param>
  </command>

```

Example 5

Using a URL to Invoke an Application

```

<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>

        <ID type="Oid">{ [ExternalLaunch (ContextImoType=com.sheer.imo.IPortConnector) (Name=example2)] } </ID>
        <ElementType type="String">Cisco</ElementType>
        <Vendor type="String">Cisco</Vendor>
        <ExternalBatchToExecute
          type="String">http:\\www.cisco.com</ExternalBatchToExecute>
        <MenuCaption type="String">URL example</MenuCaption>
        <MenuPath type="String">External Launch</MenuPath>
        <Parameters type="IMObjects_Array">
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=1)] } </ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">IP</PropertyName>
          </management.IExternalLaunchParameter>
        </Parameters>
      </management.IExternalLaunch>
    </value>
  </param>
  <param name="replace">
    <value>true</value>
  </param>
</command>

```

Example 6

Launch a URL with parameters values Gateway IP, the NE IP and the logged-in user name, using / (forward slash) as delimiter.

```

<?xml version="1.0" encoding="UTF-8" ?>
<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>
        <ID type="Oid">{ [ExternalLaunch (ContextImoType=com.sheer.imo.IPortConnector) (Name=example)] } </ID>
        <ElementType type="String">IOU</ElementType>
        <Vendor type="String">Cisco</Vendor>
        <MenuCaption type="String">My Example</MenuCaption>
        <MenuPath type="String">My Menu/My Sub Menu</MenuPath>
        <LineToExecute type="String">http://url.example.com/$GW$/com.sheer.imo.IManagedElement.IP/$USERNAME$</LineToExecute>
      </management.IExternalLaunch>
    </value>
  </param>
  <param name="replace">
    <value>true</value>
  </param>
</command>

```

```
</command>
```

Example 7

Launch a URL with parameters a, b, and c whose values are the Soft property `showClock`, a constant string `constant`, and the logged-in user name.

```
<?xml version="1.0" encoding="UTF-8"?>
<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>
        <ID type="Oid">{[ExternalLaunch(ContextImoType=com.sheer.imo.IPortConnector)
          (Name=example)]}</ID>
        <ElementType type="String">IOU</ElementType>
        <MenuCaption type="String">My Example</MenuCaption>
        <MenuPath type="String">My Menu/My Sub Menu</MenuPath>
        <LineToExecute type="String">http://url.example.com/my.action?a=~com.sheer.imo.IManagedElement.showClock~&b=constant&c=$USERNAME$</LineToExecute>
      </management.IExternalLaunch>
    </value>
  </param>
  <param name="replace">
    <value>true</value>
  </param>
</command>
```

Example 8

Launch a URL with parameters a, b, c, and d whose values are the IMO property `IP`, property `PortAlias`, a constant string `any_const_parameter`, and the logged-in user name, using the existing `Parameters` element.

```
<?xml version="1.0" encoding="UTF-8"?>
<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>
        <ID type="Oid">{[ExternalLaunch(ContextImoType=com.sheer.imo.IPortConnector)
          (Name=example)]}</ID>
        <ElementType type="String">IOU</ElementType>
        <MenuCaption type="String">My Example</MenuCaption>
        <MenuPath type="String">My Menu/My Sub Menu</MenuPath>
        <LineToExecute type="String">http://url.example.com/my.action?a=$1$&b=$2$&c=$3$&d=$USERNAME$</LineToExecute>
        <Parameters type="IMObjects_Array">
          <management.IExternalLaunchParameter>
            <ID type="Oid">{[ExternalLaunchParameter(Index=1)]}</ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">IP</PropertyName>
          </management.IExternalLaunchParameter>
          <management.IExternalLaunchParameter>
            <ID type="Oid">{[ExternalLaunchParameter(Index=2)]}</ID>
            <IMObjectType type="String">com.sheer.imo.IPortConnector</IMObjectType>
            <PropertyName type="String">PortAlias</PropertyName>
          </management.IExternalLaunchParameter>
          <management.IExternalLaunchParameter>
            <ID type="Oid">{[ExternalLaunchParameter(Index=3)]}</ID>
            <IMObjectType type="String"></IMObjectType>
          </management.IExternalLaunchParameter>
        </Parameters>
      </management.IExternalLaunch>
    </value>
  </param>
</command>
```

```

        <PropertyName type="String">any_const_parameter</PropertyName>
    </management.IExternalLaunchParameter>
</Parameters>
</management.IExternalLaunch>
</value>
</param>
<param name="replace">
    <value>>true</value>
</param>
</command>

```

Example 9

Using an Environment Variable to Invoke an Application

```

<command name="Set">
    <param name="imo">
        <value>
            <management.IExternalLaunch>

                <ID type="Oid">{[ExternalLaunch(ContextImoType=com.sheer.imo.IManagedElement) (Name=example3)]}</ID>
                <ElementType type="String">Cisco</ElementType>
                <Vendor type="String">Cisco</Vendor>
                <ExternalBatchToExecute
                    type="String">%EMS_A%runthis.bat</ExternalBatchToExecute>
                <MenuCaption type="String">environment variable</MenuCaption>
                <MenuPath type="String">External Launch</MenuPath>
                <Parameters type="IMObjects_Array">
                    <management.IExternalLaunchParameter>
                        <ID type="Oid">{[ExternalLaunchParameter(Index=1)]}</ID>
                        <IMObjectType type="String"></IMObjectType>
                        <PropertyName type="String">www.cisco.com</PropertyName>
                    </management.IExternalLaunchParameter>
                    <management.IExternalLaunchParameter>
                        <ID type="Oid">{[ExternalLaunchParameter(Index=2)]}</ID>
                        <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
                        <PropertyName type="String">IP</PropertyName>
                    </management.IExternalLaunchParameter>
                </Parameters>
            </management.IExternalLaunch>
        </value>
    </param>
    <param name="replace">
        <value>true</value>
    </param>
</command>

```

Example 10

Using Multiple IMO Contexts to Launch an Application

```

<command name="Set">
  <param name="imo">
    <value>
      <management.IExternalLaunch>

        <ID type="Oid">{ [ExternalLaunch(ContextImoType=com.sheer.imo.IPortConnector) (Name=example4) ]}</ID>
        <ElementType type="String">IOU</ElementType>
        <Vendor type="String">Cisco</Vendor>
        <ExternalBatchToExecute
          type="String">c:runthis.bat</ExternalBatchToExecute>
        <MenuCaption type="String">ping</MenuCaption>
        <MenuPath type="String">External Launch</MenuPath>
        <Parameters type="IMObjects_Array">
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=1) ]}</ID>
            <IMObjectType type="String">com.sheer.imo.IManagedElement</IMObjectType>
            <PropertyName type="String">IP</PropertyName>
          </management.IExternalLaunchParameter>
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=2) ]}</ID>
            <IMObjectType type="String">com.sheer.imo.IPortConnector</IMObjectType>
            <PropertyName type="String">PortAlias</PropertyName>
          </management.IExternalLaunchParameter>
          <management.IExternalLaunchParameter>
            <ID type="Oid">{ [ExternalLaunchParameter (Index=3) ]}</ID>
            <IMObjectType type="String"></IMObjectType>
            <PropertyName type="String">any_const_parameter</PropertyName>
          </management.IExternalLaunchParameter>
        </Parameters>
      </management.IExternalLaunch>
    </value>
  </param>
  <param name="replace">
    <value>true</value>
  </param>
</command>

```

Sample Batch Files

The following are examples of batch files that can be used to launch an external application:

Example 1: To Ping a Network Element

```
ping %1 &
```

Example 2: To Launch a URL

```
explorer http://%1 &
exit
```

