

Experimenting with the REST API – What Tools can I use? – Part IV

In part III of this blog series on the common REST API tools, we started looking at some of the more commonly used tools that can be used to interact with the REST API. We very briefly mentioned one such utility, that being xmllint(1) which is command-line utility that is primarily used to parse XML files and identify any errors in your code (which is such a common occurrence when working with XML) before you try to use it with the NSX for vSphere Manager. If you are uncertain if the XML payload is correct, then you really are going to have a difficult time working with the REST API and NSX for vSphere Manager.

However, there is another very nice use of xmllint(1) and this is what I am going to focus on in this blog post.

Recall in part III we mentioned there is an issue currently with the NSX for vSphere platform, and that is that JSON is **NOT** currently **SUPPORTED**. So what do we want to use xmllint(1) for then? OK, let's start at the beginning, and all will become clear.

On Mac OS X xmllint(1) is located in /usr/bin/xmllint

```
$ which xmllint
/usr/bin/xmllint
```

And for the Man Pages :

```
$ man -k xmllint
xmllint(1)          - command line XML tool
$ man xmllint
```

So, let us take the following example where we want to issue a very basic REST API request to the NSX for vSphere Manager, but in this case we want to return the data in JSON. I always like to use the following as an example :

1. The following REST API Request return's the NSX for vSphere Manager API versions in XML :

```
<?xml version="1.0" encoding="UTF-8"?>
<versions><version value="3.0"><module name="Ai" baseUri="/api/3.0/ai" version="3.0"><module name="EdgeBulk" baseUri="/api/3.0/edges/edgebulk" version="3.0"/>
<module name="EdgeBasic" baseUri="/api/3.0/edges" version="3.0"><module name="EdgeBasic" baseUri="/api/3.0/edges/" version="3.0"><module name="Edge" baseUri="/api/3.0/edges" version="3.0"/></version><version value="4.0"><module name="Firewall" baseUri="/api/4.0/firewall" version="4.0"><module name="Bridging" baseUri="/api/4.0/edges/bridging" version="4.0"><module name="EdgeTrinity" baseUri="/api/4.0/edges" version="4.0"><module name="EdgeTrinityBasic" baseUri="/api/4.0/edges" version="4.0"><module name="VdrInterface" baseUri="/api/4.0/edges/ids" version="4.0"><module name="DeploymentContainerBasic" baseUri="/api/4.0/services/deploymentcontainers/" version="4.0"><module name="DeploymentContainerBasic" baseUri="/api/4.0/services/deploymentcontainers" version="4.0"><module name="DeploymentContainers" baseUri="/api/4.0/services/deploymentcontainers" version="4.0"><module name="SpooGuardTrinity" baseUri="/api/4.0/services/spoofguard" version="4.0"></version><version value="1.0"><module name="UserIdentity" baseUri="/api/1.0/identity" version="1.0"><module name="SAMHealthRest" baseUri="/api/1.0/sam" version="1.0"><module name="DbMaintain" baseUri="/api/1.0/dbmaintain" version="1.0"><module name="Directory" baseUri="/api/1.0/directory" version="1.0"><module name="DirectoryDomainObject" baseUri="/api/1.0/directory/domainobject" version="1.0"><module name="Server" baseUri="/api/1.0/hosts" version="1.0"><module name="USVMLoggingLevel" baseUri="/api/1.0/usvmlogging" version="1.0"><module name="EventControlConfig" baseUri="/api/1.0/eventcontrol" version="1.0"><module name="PasswordResync" baseUri="/api/1.0/passwordresync" version="1.0"><module name="VdnConfig" baseUri="/api/1.0/vdn/config" version="1.0"></version><version value="2.1"><module name="Flow" baseUri="/api/2.1/app" version="2.1"><module name="VshieldAppGlobal" baseUri="/api/2.1/app" version="2.1"></version><version value="2.0"><module name="Firewall" baseUri="/api/2.0/app/firewall" version="2.0"><module name="Dlp" baseUri="/api/2.0/dlp" version="2.0"><module name="EndpointSolution" baseUri="/api/2.0/endpointsecurity" version="2.0"><module name="SecurityGroup" baseUri="/api/2.0/services/securitygroup" version="2.0"><module name="IPAM" baseUri="/api/2.0/services/ipam" version="2.0"><module name="Pset" baseUri="/api/2.0/services/pset" version="2.0"><module name="Translation" baseUri="/api/2.0/services/translation" version="2.0"><module name="Auditlog" baseUri="/api/2.0/auditlog" version="2.0"><module name="ApplicationGroup" baseUri="/api/2.0/services/applicationgroup" version="2.0"><module name="Application" baseUri="/api/2.0/services/application" version="2.0"><module name="SystemEventConfig" baseUri="/api/2.0/systemevent/config" version="2.0"><module name="EventCode" baseUri="/api/2.0/systemevent" version="2.0"><module name="SystemEvent" baseUri="/api/2.0/systemevent" version="2.0"><module name="Pset" baseUri="/api/2.0/services/pset" version="2.0"><module name="Task" baseUri="/api/2.0/services/taskservice" version="2.0"><module name="QueryService" baseUri="/api/2.0/services/common" version="2.0"><module name="TrustStore" baseUri="/api/2.0/services/truststore" version="2.0"><module name="SecurityPolicy" baseUri="/api/2.0/services/policy" version="2.0"><module name="SyslogServer" baseUri="/api/2.0/services/syslog/config" version="2.0"><module name="Housekeeping" baseUri="/api/2.0/services/housekeeping" version="2.0"><module name="UserMgmt" baseUri="/api/2.0/services/usermgmt" version="2.0"><module name="Functionality" baseUri="/api/2.0/si" version="2.0"><module name="ServiceManager" baseUri="/api/2.0/si" version="2.0"><module name="ServiceInstance" baseUri="/api/2.0/si" version="2.0"><module name="PartnerTest" baseUri="/api/2.0/si" version="2.0"><module name="ServiceProfile" baseUri="/api/2.0/si" version="2.0"><module name="Transport" baseUri="/api/2.0/si" version="2.0"><module name="ServiceInstance" baseUri="/api/2.0/si" version="2.0"><module name="Implementation" baseUri="/api/2.0/si" version="2.0"><module name="Category" baseUri="/api/2.0/si" version="2.0"><module name="CH" baseUri="/api/2.0/si" version="2.0"><module name="VcConfig" baseUri="/api/2.0/services" version="2.0"><module name="SSOConfig" baseUri="/api/2.0/services" version="2.0"><module name="SpooGuard" baseUri="/api/2.0/services/spoofguard" version="2.0"><module name="Inventory" baseUri="/api/2.0/services/inventory" version="2.0"><module name="NetworkPrep" baseUri="/api/2.0/vdn/fabric" version="2.0"><module name="SystemAlarm" baseUri="/api/2.0/services" version="2.0"><module name="Vnvp" baseUri="/api/2.0/vdn" version="2.0"><module name="VdnMapping" baseUri="/api/2.0/vdn" version="2.0"><module name="VirtualWire" baseUri="/api/2.0/vdn" version="2.0"><module name="VdnConfig" baseUri="/api/2.0/vdn/config" version="2.0"><module name="VdnScope" baseUri="/api/2.0/vdn" version="2.0"><module name="FabricSync" baseUri="/api/2.0/si/fabric" version="2.0"><module name="DeploymentConfig" baseUri="/api/2.0/si" version="2.0"><module name="VnAgent" baseUri="/api/2.0/si" version="2.0"><module name="SecurityTag" baseUri="/api/2.0/services/securitytags" version="2.0"><module name="VdnScopeConnCheck" baseUri="/api/2.0/vdn/virtualwires/vwid/conn-check" version="2.0"><module name="HostOps" baseUri="/api/2.0/vdn/config" version="3.0"></version></versions>
```

```
<html><head><title>VMware vFabric tc Runtime 2.9.7.RELEASE/7.0.55.A.RELEASE - Error reports</title><style><!-- H1 (font-family:Tahoma,Arial,sans-serif;color:white;background-color:black;font-size:22px; text-align:center) H2 (font-family:Tahoma,Arial,sans-serif;color:white;background-color:black;font-size:16px; text-align:center) H3 (font-family:Tahoma,Arial,sans-serif;color:white;background-color:black;font-size:14px; text-align:center) BODY (font-family:Tahoma,Arial,sans-serif;color:black;background-color:white) B (font-family:Tahoma,Arial,sans-serif;color:white;background-color:black;font-size:12px) P (font-family:Tahoma,Arial,sans-serif;color:black;font-size:12px) A (color : black);A[name : color];B[HR (color : #525D76);]--></style></head><body><h1>HTTP Status 406 - </h1><HR size="1" noshade="noshade"><p><b>Status report</b><br><b>code</b>=500<br><b>message</b>= /b> </p><p><b>description</b>= /b> </p><p>The resource identified by this request is only capable of generating responses with characteristics not acceptable according to the request "accept" headers.</p><p><b>HR size="1" noshade="noshade"><h3>VMware vFabric tc Runtime 2.9.7.RELEASE/7.0.55.A.RELEASE</h3></body></html></pre>
```

So, what does this all mean then? Not clear yet? Well, in the case we are now forced to use the payload returned in XML! As you can see in the above example, that is a very basic REST API Request and see what has been returned! Easy to read? Indeed it is not!

3. This time when we issue the REST API Request we are going to re-direct the output as in the following example :

```
curl -k -u <username>:<password> -H "Accept:application/xml" -H "Content-Type:application/xml" -X GET https://<NSX Manager IP Address>/api/versions > /var/tmp/apiversions.xml
```

4. Now we can finally add the magic of `xmllint(1)` to make the contents of this file humanly readable. We do this by issuing the following command :

```
$ xmllint --format /var/tmp/apiversions.xml
```

```
<?xml version="1.0" encoding="UTF-8"?>
<versions>
  <version value="3.0">
    <module name="A1" baseUri="/api/3.0/a1" version="3.0"/>
    <module name="EdgeBulk" baseUri="/api/3.0/edges/{edgeId}" version="3.0"/>
    <module name="EdgeBasic" baseUri="/api/3.0/edges" version="3.0"/>
    <module name="EdgeBasic" baseUri="/api/3.0/edges/" version="3.0"/>
    <module name="Edge" baseUri="/api/3.0/edges" version="3.0"/>
  </version>
  <version value="4.0">
    <module name="Firewall" baseUri="/api/4.0/firewall" version="4.0"/>
    <module name="Bridging" baseUri="/api/4.0/edges/{edgeId}/bridging" version="4.0"/>
    <module name="EdgeTrinity" baseUri="/api/4.0/edges" version="4.0"/>
    <module name="EdgeTrinityBasic" baseUri="/api/4.0/edges" version="4.0"/>
    <module name="EdgeTrinityBasic" baseUri="/api/4.0/edges/" version="4.0"/>
    <module name="VdrInterface" baseUri="/api/4.0/edges/{id}" version="4.0"/>
    <module name="DeploymentContainerBasic" baseUri="/api/4.0/services/deploymentcontainers/" version="4.0"/>
    <module name="DeploymentContainerBasic" baseUri="/api/4.0/services/deploymentcontainers" version="4.0"/>
    <module name="DeploymentContainer" baseUri="/api/4.0/services/deploymentcontainers" version="4.0"/>
    <module name="SpoonGuardTrinity" baseUri="/api/4.0/services/spoonguard" version="4.0"/>
  </version>
  <version value="1.0">
    <module name="UserIdentity" baseUri="/api/1.0/identity" version="1.0"/>
    <module name="SAMHealthRest" baseUri="/api/1.0/sam" version="1.0"/>
    <module name="DbMaintain" baseUri="/api/1.0/dbmaintain" version="1.0"/>
    <module name="Directory" baseUri="/api/1.0/directory" version="1.0"/>
    <module name="DirectoryDomainObject" baseUri="/api/1.0/directory/domainobject" version="1.0"/>
    <module name="Server" baseUri="/api/1.0/hosts" version="1.0"/>
    <module name="USVMLoggingEngine" baseUri="/api/1.0/usvmlgeng" version="1.0"/>
    <module name="EventControlConfig" baseUri="/api/1.0/eventcontrol" version="1.0"/>
    <module name="PasswordResync" baseUri="/api/1.0/passwordResync" version="1.0"/>
    <module name="VdnConfig" baseUri="/api/1.0/vdn/config" version="1.0"/>
  </version>
  <version value="2.1">
    <module name="Flow" baseUri="/api/2.1/app" version="2.1"/>
    <module name="VshFieldAppGlobal" baseUri="/api/2.1/app" version="2.1"/>
  </version>
  <version value="2.0">
    <module name="Firewall" baseUri="/api/2.0/app/firewall" version="2.0"/>
    <module name="Dlp" baseUri="/api/2.0/dlp" version="2.0"/>
    <module name="EndpointSolution" baseUri="/api/2.0/endpointsecurity" version="2.0"/>
    <module name="SecurityGroup" baseUri="/api/2.0/services/securitygroup" version="2.0"/>
    <module name="IPAM" baseUri="/api/2.0/services/ipam" version="2.0"/>
    <module name="MACSet" baseUri="/api/2.0/services/macset" version="2.0"/>
    <module name="Translation" baseUri="/api/2.0/services/securitygroup" version="2.0"/>
    <module name="AuditLog" baseUri="/api/2.0/auditlog" version="2.0"/>
  </version>
</versions>
```

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