Purpose of nagiosXML

The purpose of nagiosXML is to create structured, up-to-date network diagrams directly from Nagios configuration files. nagiosXML is a Java utility program that reads Nagios configuration files and produces specially formatted XML files. In turn, the XML files can be diagrammed using readily available XML diagramming programs such as DrawTag.

What makes this useful? Maintaining network diagrams is a perennial documentation problem. Tools like Visio produce attractive diagrams, but they are hard to maintain. Nagios provides up-to-date diagrams, but unfortunately they are difficult to read in large networks.

The nagiosXML approach is to create structured network diagrams, one per hostgroup in the Nagios configuration. Beginning with Nagios 2.0, hostgroups are purely documentation entries. The hostgroups may be defined to show alternate views of the network, e.g. high level or low level, geographic or functional. The resulting network diagrams can be easily regenerated when the Nagios configuration changes.

Preparing Nagios Configuration Files

nagiosXML relies upon the meaningful use of two Nagios features: parent-child relationships and use of hostgroups to organize collections of hosts for management purposes. The parent-child hierarchy is a requirement for effective notification. As noted above, the hostgroups feature is now documentation only. Depending on their specific needs, Nagios users can create hostgroups for geographies, applications, responsibilities, or other meaningful criteria. Hosts may participate in multiple hostgroups.

Appendix A shows a simple example of a hostgroup organized by geographic location.

Technical Requirements

nagiosXML works in Nagios 1.2 and 2.2 environments, but it has not been tested in 3.0. From the Nagios documentation, it appears the 3.0 changes would not affect operation of nagiosXML.

To run nagiosXML you need:

- Java JRE 1.4.2 or higher; 1.5 recommended.
- JDOM libraries1.0 or above, available from http://www.jdom.org/downloads/index.html.
- The nagiosXML.class executable from http://www.nagiosexchange.org.

To run DrawTag you also need:

- DrawTag, available from http://www.intsysr.com/drawtag.htm.
- FreeHEP vector graphics libraries 1.2.1 or above, available from ftp://ftp.slac.stanford.edu/software/freehep/VectorGraphics/.

See appendices B and C for Linux and Windows command line examples.

Operation of nagiosXML

nagiosXML runs from a command prompt, so it is well suited for scripting automatic operation. Operation is governed by command line options:

       -h   Display brief Help messages
       -a   Include Aliases in XML (default=no)

-c   Directory for configuration files (default=.)

-i   Include IP addresses in XML (default=no)

-s   Include Services except ping in XML (default=no)

-v   Display Verbose processing messages (default=no)

-x   Directory for XML output files (default=.)

Following processing of command line options, nagiosXML finds the main configuration file nagios.cfg. It searches this file recursively for other configuration files and directories. Each configuration file is searched for objects of interest. These objects always include hosts and hostgroups and optionally include aliases, IP addresses, and services.

After these objects are collected, each hostgroup is transformed to a separate XML file whose root element is the hostgroup name. All hosts in the hostgroup are included in the XML file. Each host has an "effective parent" that is the first listed parent that is also a member of the hostgroup. This logic determines the XML hierarchy.

Hosts, hostgroups, and services are represented as XML elements; aliases and IP addresses are represented as attributes of hosts. Since XML naming standards are more restrictive than Nagios naming standards, each element name must be converted to a valid XML name. nagiosXML uses the Java regex utility for this purpose. Invalid first characters are prefixed with an underscore; other invalid characters are replaced with a period and multiple periods are combined into one.

Appendix d shows a sample DrawTag diagram for the hostgroup outlined in Appendix A.

If you experience problems with nagiosXML, try running it with the -v option and check the messages. If you still have problems, email me at steeter@symyx.com and I will try to assist.

Appendix A: Sample Hostgroup Organized Geographically

```
define hostgroup {
   hostgroup_name        genevasite
   alias                 Geneva Site
   members               genevavpn-wan,genevavpn,orbitalch,geneva-s00-2950
   members               srv-geneva-dc,srv-autodose,srv-geneva-pdm
   members               geneva-sensor
   }
define host {
   use                   generic-host ; host template
   host_name             genevavpn-wan
   alias                 Geneva VPN/Firewall/Router - WAN
   address               195.70.0.92
   parents               internap-internet
   }
define host {
   use                   generic-host ; host template
   host_name             genevavpn
   alias                 Geneva VPN/Firewall/Router
   address               172.31.8.1
   parents               genevavpn-wan
   }
etc. etc.
```

```
define service {
   use                  generic-service ; template
   host_name            genevavpn-wan
   service_description  PING
   check_command        check_world_ping
   }
define service {
   use                  generic-service ; template
   host_name            genevavpn
   service_description  PING
   check_command        check_world_ping
   }
etc. etc.
define service {
   use                  generic-service ; template
   host_name            srv-geneva-dc
   service_description  SMTP
   check_command        check_smtp
   }
etc. etc.
```

Appendix B: Sample Linux Command Line Example

```
#!/bin/sh
#Convert Nagios config to XML files and diagram them
#Three formats:
#       <hostgroup>_host.jpg shows hosts with attributes, no services
#       <hostgroup>_serv.jpg shows hosts & services, no attributes
#       <hostgroup>_full.jpg shows hosts, services, & attributes
cd /etc/nagios
rm diagrams/*.jpg
rm diagrams/*.xml
#(1) Set up Java execution environment
JAVA=/usr/java/jre1.5.0_11/bin/java
JRT=/usr/java/jre1.5.0_11/lib/rt.jar
JDOM=/usr/java/jdom-1.0/build/jdom.jar
HEP=/usr/java/VectorGraphics-1.2.2/lib
HEPJ=$HEP/freehep-graphics2d.jar:$HEP/freehep-graphicsio.jar:$HEP/freehep-
graphicsio-emf.jar
RUN=/usr/java/local
#(2) Create XML files for hosts format from Nagios configuration
$JAVA -cp $RUN:$JRT:$JDOM nagiosXML -v -a -i -x diagrams
#(3) Create host diagrams
for i in `ls diagrams | grep .xml | sed -e 's/.xml//'`
do
   $JAVA -cp $RUN:$JRT:$HEPJ DrawTag -v -a -date -title "Hosts in ${i}"
diagrams/${i}.xml diagrams/${i}_host.jpg
done
#(4) Create XML files for other formats from Nagios configuration
$JAVA -cp $RUN:$JRT:$JDOM nagiosXML -v -a -i -s -x diagrams
#(5) Create diagrams in two formats, one without and one with attributes
for i in `ls diagrams | grep .xml | sed -e 's/.xml//'`
do
```

```
   $JAVA -cp $RUN:$JRT:$HEPJ DrawTag -v -date -title "Hosts and Services
in  ${i}" diagrams/${i}.xml diagrams/${i}_serv.jpg
   $JAVA -cp $RUN:$JRT:$HEPJ DrawTag -v -a -date -title "Full Details of
${i}" diagrams/${i}.xml diagrams/${i}_full.jpg
done
```

Appendix C: Sample Windows Command Line Example

```
rem Convert Nagios config to XML files and diagram them
cd C:\@Steven\XML
set DIR=Nagios
rem Set JRE path
set JAVA=C:\Program Files\Java
set JRE=jre1.5.0_10
set JAVA_HOME=%JAVA%\%JRE%
path %JAVA_HOME%\bin;%PATH%;.
java -Xmx256m -cp ..\Java nagiosXML -v -a -i -s -c %DIR% -x %DIR%
dir %DIR%\*.xml /B > xml.txt
for /F "tokens=1 delims=." %%i in (xml.txt) do java -Xmx256m -cp
"%JAVA%\Drawtag";"%JAVA%\freehep-v1.2.1\lib" DrawTag -v -a2 -date -title
"Diagram of %%i" %DIR%\%%i.xml %DIR%\%%i.jpg
```

Appendix D: Sample DrawTag Diagram