ATT-YANG DESIGN STUDIO
User Guide

6/28/2015

Version 1.5

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ATT-YANG DESIGN STUDIO User Guide

Create a New YANG Project:

1. File->New->Other
2. Search for Yang
3. Select New Yang Project (under Yang Wizard)
4. Enter a Project Name
5. Select Finish
6. [If Finish is not selectable, you most likely have a problem with the Project Name you entered]
7. If successful, you will see the new Project in the Package Explorer Window with a "Yang-Modules" folder under it

Create a New YANG Module (in this example illustration it is created under the "Yang-Modules" folder):

1. Right-click on Yang-Modules folder name
2. New->Other
3. Search for Yang
4. Select New Yang File (under Yang Wizard)
5. [Alternatively you can also create via File->New->Other->(Yang Wizard) New Yang File]
6. Enter a New Yang Module Name
7. Select Finish
8. [If Finish is not selectable, you most likely have a problem with the Module Name you entered]
9. If successful, you will see the new Module in the Package Explorer Window under the folder you selected for its creation

WYSWYG Editor (using XText):

1. Click on any YANG Module in the Package Explorer Window
2. The model should show up in the Presentation Space with its YANG elements recognized (e.g., highlighted appropriately)
3. If there is a syntax error that is recognized by the XText grammar, it will be visually indicated
4. For context-specific help, position the cursor within the context and use <CONTROL><SPACE> to get the appropriate help
5. For Hover-Over help, position the cursor over context and see visual help based
6. Several other WYSWYG features are available, including:
    a. Auto-matching on quotes, brackets, etc.
    b. Presentation of all groupings for inclusion in "uses"
        - Position cursor after uses and use <CONTROL><SPACE> to see all available groupings
    c.

Note 1: When you bring up a YANG file for the very first time, you will need to associate it with XText when presented with the option to do so.

Note 2: Not that the WYSIWYG Editor does find a majority of the syntax errors, however not all YANG syntax is coded into it. For a deeper check, please run the Check Yang Syntax option below.

Note 3: The WYSWYG editor is not very good at following the PATH to find imported modules, so you might need to copy the imported modules into the local workspace directory if you would like to resolve dependency issues that this editor highlights. Alternatively, run the Check Yang Syntax option below after setting the YANG_MODPATH to validate imports.

Selectable features supported by ATT-Yang:

1. Check Yang Syntax
   - The results are displayed in the Eclipse Console and Problems Window
2. Create YIN/XML File
   - The results are displayed in a new presentation window and saved to file
3. Create Tree File (with selectable tree depth
   - The results are displayed in a new presentation window and saved to file
4. Create UML file
   - The results are displayed in a new presentation window and saved to file
5. Create PNG from UML
   - The UML output is displayed in a new presentation window
   - The PNG is displayed in a new pop-up window created by the image viewer and saved to the <img> directory under the Eclipse Workspace directory for the Yang Model
6. Create XSD file
   - The results are displayed in a new presentation window and saved to file
7. Create JS Tree
   - The results are displayed in a new presentation window and saved to file.
   - The user can interact with the JSTree output by expanding or contracting the depth of the YANG model namespace
8. Create Skeleton XML File
   - The results are displayed in a new presentation window and saved to file
   - The user can manipulate the XML output file, such as adding instance data, to illustrate a sample instantiation of the YANG model
9. Create DSDL File
   - The results are displayed in a new presentation window and saved to file
10. Create XSLT File
    - The results are displayed in a new presentation window and saved to file
11. About ATT-YANG IDE (aka YANG Design Studio)
    - A display of developer, version and dependency information

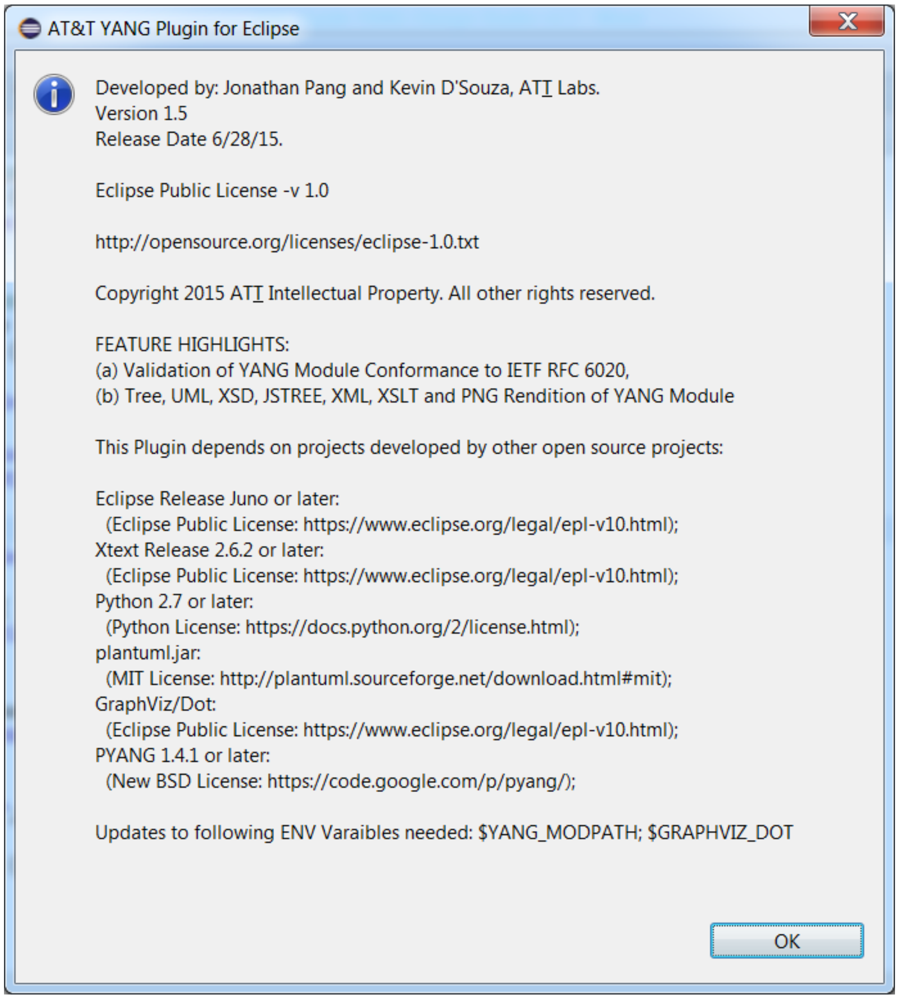
All File Output options give the user the choice of where to save the file, with the default being the Eclipse Workspace directory.

NOTE: When you select any of the above options, it might seem that Eclipse has hung. Please be patient as it takes a several seconds to complete the task.

Known Issues:

- Automatic syntax validation using the WYSIWYG Editor sometimes marks valid statements with errors. The selectable ATT-Yang->Check Yang Syntax is more precise. A fix will require enhancement to the XText module.
- Caching of path names to dependency commands is not implemented, so execution times of the ATT-Yang selectable options is dependent on the speed at which the machine can find the dependencies
- Some of the rendering options might not work with all YANG models as the tool relies on pyang for rendering YANG models. A fix might require developing an alternate rending method.

About ATT-YANG IDE Screen Shot


AT&T YANG Plugin for Eclipse

Developed by: Jonathan Pang and Kevin D'Souza, ATT Labs.
Version 1.5
Release Date 6/28/15.

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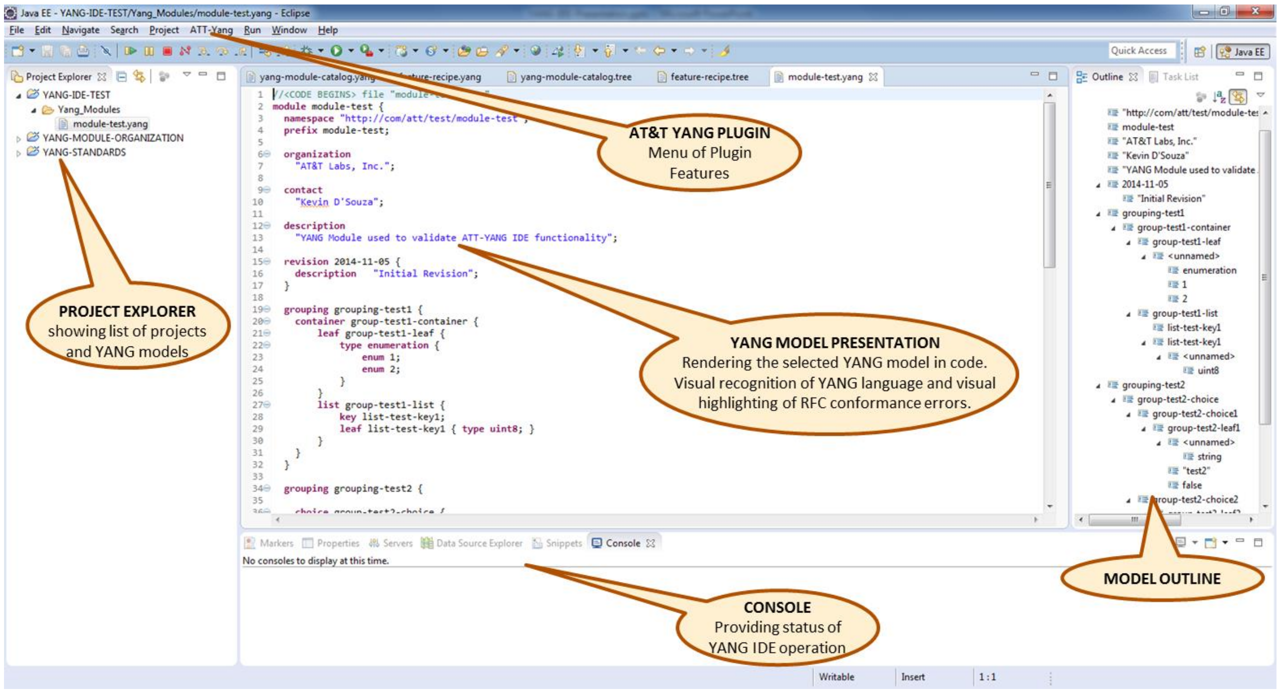
FEATURE HIGHLIGHTS:
(a) Validation of YANG Module Conformance to IETF RFC 6020,
(b) Tree, UML, XSD, JSTREE, XML, XSLT and PNG Rendition of YANG Module

This Plugin depends on projects developed by other open source projects:

Eclipse Release Juno or later:
  (Eclipse Public License: https://www.eclipse.org/legal/epl-v10.html);
Xtext Release 2.6.2 or later:
  (Eclipse Public License: https://www.eclipse.org/legal/epl-v10.html);
Python 2.7 or later:
  (Python License: https://docs.python.org/2/license.html);
plantuml.jar:
  (MIT License: http://plantuml.sourceforge.net/download.html#mit);
GraphViz/Dot:
  (Eclipse Public License: https://www.eclipse.org/legal/epl-v10.html);
PYANG 1.4.1 or later:
  (New BSD License: https://code.google.com/p/pyang/);

Updates to following ENV Varaibles needed: $YANG_MODPATH; $GRAPHVIZ_DOT

ATT-YANG DESIGN STUDIO ECLIPSE PLUGIN OVERVIEW

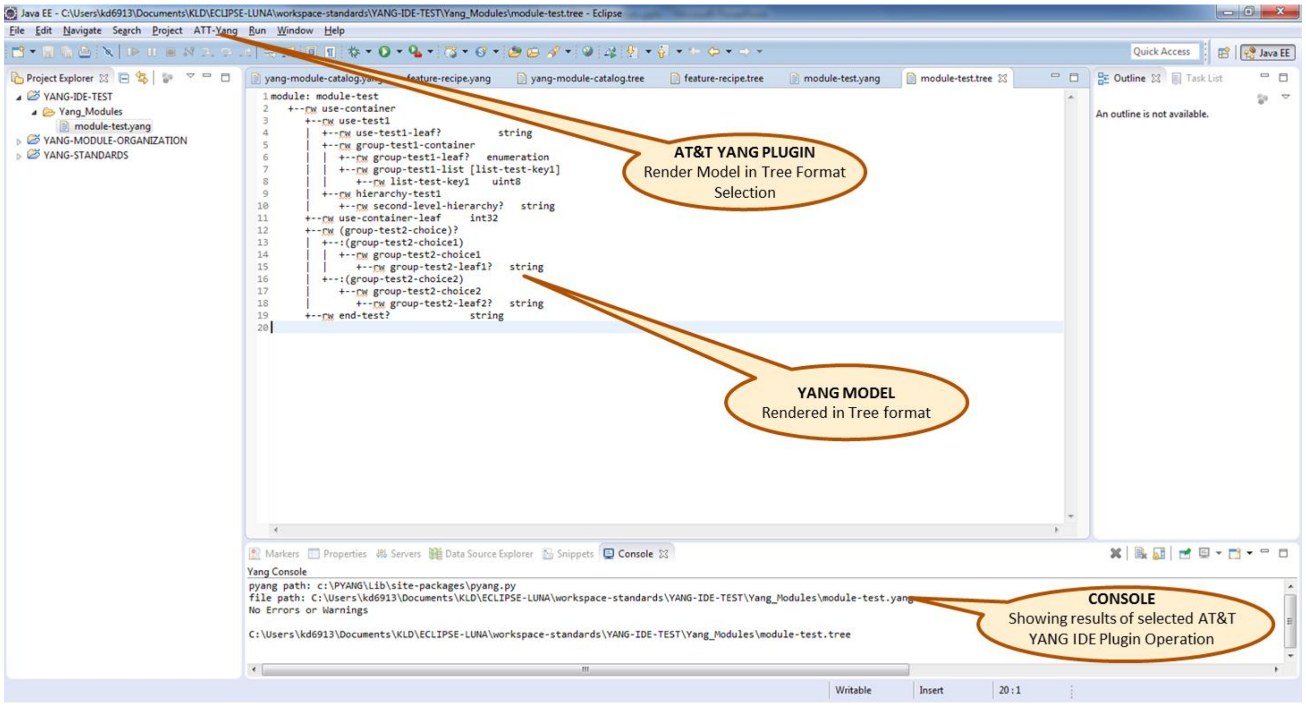


```
//<CODE BEGINS> file "module-
module module-test {
  namespace "http://com/att/test/module-test";
  prefix module-test;

  organization
    "AT&T Labs, Inc.";

  contact
    "Kevin D'Souza";

  description
    "YANG Module used to validate ATT-YANG IDE functionality";

  revision 2014-11-05 {
    description   "Initial Revision";
  }

  grouping grouping-test1 {
    container group-test1-container {
        leaf group-test1-leaf {
            type enumeration {
                enum 1;
                enum 2;
            }
        }
        list group-test1-list {
            key list-test-key1;
            leaf list-test-key1 { type uint8; }
        }
    }
  }

  grouping grouping-test2 {

    choice group-test2-choice {
```

```
"http://com/att/test/module-te
module-test
"AT&T Labs, Inc."
"Kevin D'Souza"
"YANG Module used to validate
2014-11-05
  "Initial Revision"
grouping-test1
  group-test1-container
    group-test1-leaf
      <unnamed>
        enumeration
        1
        2
    group-test1-list
      list-test-key1
      list-test-key1
        <unnamed>
          uint8
grouping-test2
  group-test2-choice
    group-test2-choice1
      group-test2-leaf1
        <unnamed>
          string
        "test2"
        false
    group-test2-choice2
```

No consoles to display at this time.

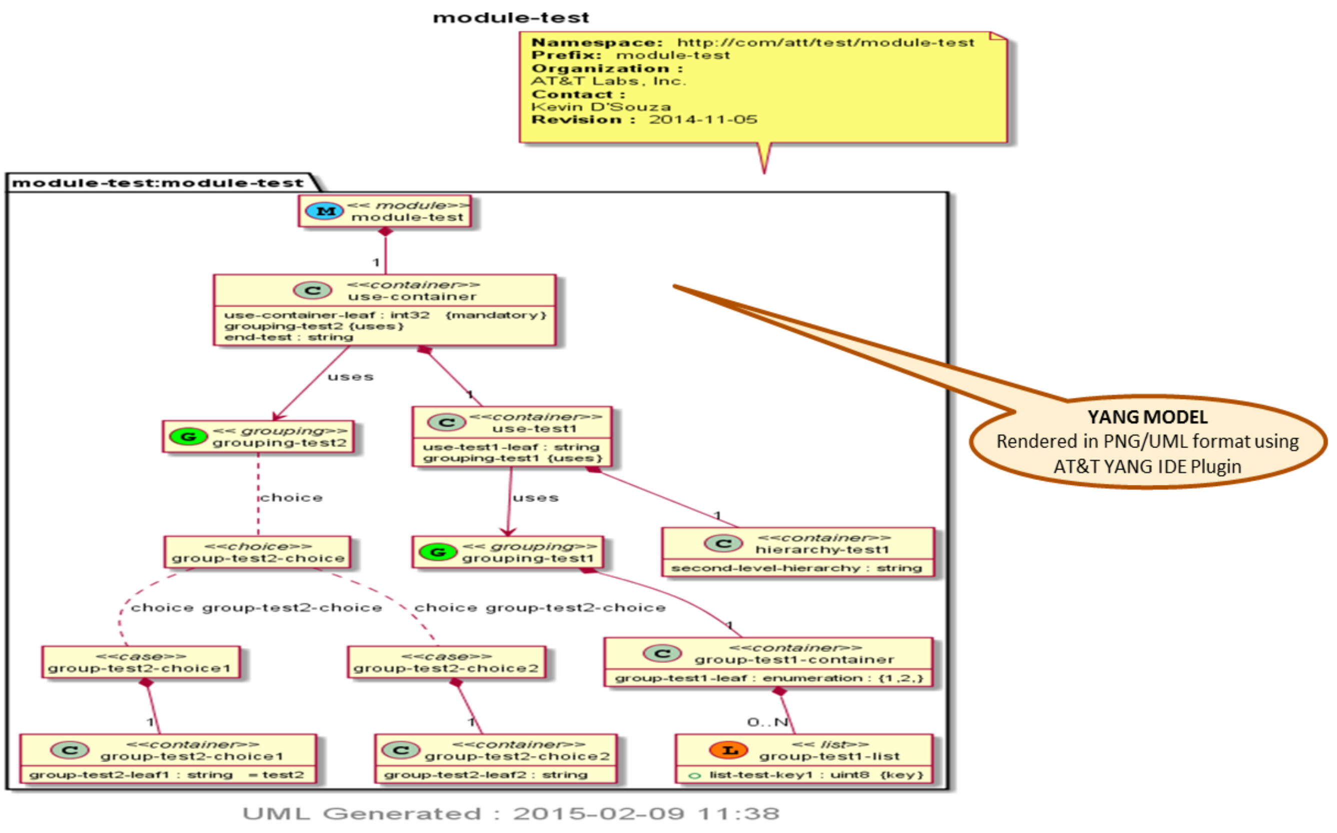
ATT-YANG DESIGN STUDIO – EXAMPLE RENDERING OF A TREE


Java EE - C:\Users\kd6913\Documents\KLD\ECLIPSE-LUNA\workspace-standards\YANG-IDE-TEST\Yang_Modules\module-test.tree - Eclipse
File Edit Navigate Search Project ATT-Yang Run Window Help
Project Explorer
YANG-IDE-TEST
Yang_Modules
module-test.yang
YANG-MODULE-ORGANIZATION
YANG-STANDARDS
yang-module-catalog.yang
feature-recipe.yang
yang-module-catalog.tree
feature-recipe.tree
module-test.yang
module-test.tree
Outline
Task List
An outline is not available.
AT&T YANG PLUGIN
Render Model in Tree Format Selection
YANG MODEL
Rendered in Tree format
Markers Properties Servers Data Source Explorer Snippets Console
Yang Console
CONSOLE
Showing results of selected AT&T YANG IDE Plugin Operation
Writable
Insert
20 : 1

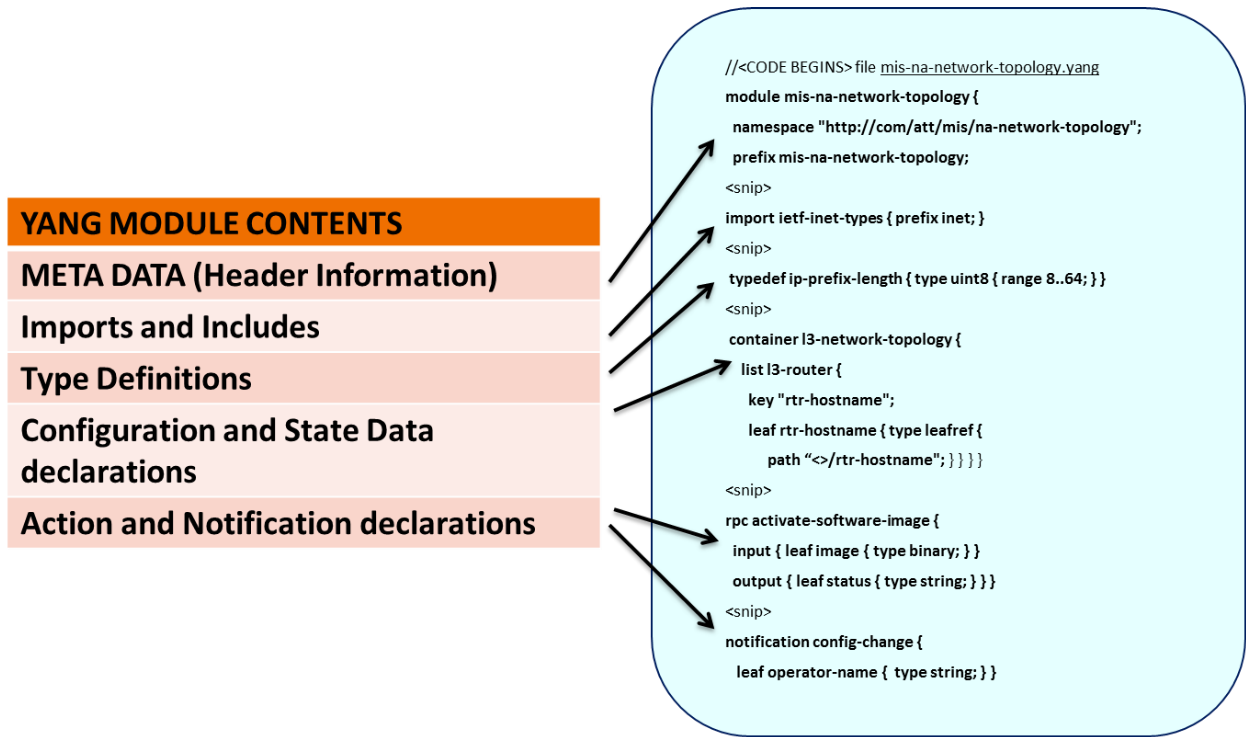
```
module: module-test
   +--rw use-container
      +--rw use-test1
      |  +--rw use-test1-leaf?          string
      |  +--rw group-test1-container
      |  |  +--rw group-test1-leaf?   enumeration
      |  |  +--rw group-test1-list [list-test-key1]
      |  |     +--rw list-test-key1    uint8
      |  +--rw hierarchy-test1
      |     +--rw second-level-hierarchy?   string
      +--rw use-container-leaf     int32
      +--rw (group-test2-choice)?
      |  +--:(group-test2-choice1)
      |  |  +--rw group-test2-choice1
      |  |     +--rw group-test2-leaf1?   string
      |  +--:(group-test2-choice2)
      |     +--rw group-test2-choice2
      |        +--rw group-test2-leaf2?   string
      +--rw end-test?             string
```

```
pyang path: c:\PYANG\Lib\site-packages\pyang.py
file path: C:\Users\kd6913\Documents\KLD\ECLIPSE-LUNA\workspace-standards\YANG-IDE-TEST\Yang_Modules\module-test.yang
No Errors or Warnings

C:\Users\kd6913\Documents\KLD\ECLIPSE-LUNA\workspace-standards\YANG-IDE-TEST\Yang_Modules\module-test.tree
```

ATT-YANG DESIGN STUDIO – EXAMPLE RENDERING OF UML


module-test
Namespace: http://com/att/test/module-test
Prefix: module-test
Organization :
AT&T Labs, Inc.
Contact :
Kevin D'Souza
Revision : 2014-11-05
module-test:module-test
<< module>> module-test
1
<<container>> use-container
use-container-leaf : int32 {mandatory}
grouping-test2 {uses}
end-test : string
uses
1
<< grouping>> grouping-test2
<<container>> use-test1
use-test1-leaf : string
grouping-test1 {uses}
choice
uses
1
<<choice>> group-test2-choice
<< grouping>> grouping-test1
<<container>> hierarchy-test1
second-level-hierarchy : string
choice group-test2-choice
choice group-test2-choice
1
<<case>> group-test2-choice1
<<case>> group-test2-choice2
<<container>> group-test1-container
group-test1-leaf : enumeration : {1,2,}
1
1
0..N
<<container>> group-test2-choice1
group-test2-leaf1 : string = test2
<<container>> group-test2-choice2
group-test2-leaf2 : string
<< list>> group-test1-list
list-test-key1 : uint8 {key}
YANG MODEL
Rendered in PNG/UML format using
AT&T YANG IDE Plugin
UML Generated : 2015-02-09 11:38

YANG MODULE OVERVIEW


YANG MODULE CONTENTS
META DATA (Header Information)
Imports and Includes
Type Definitions
Configuration and State Data declarations
Action and Notification declarations

```
//<CODE BEGINS> file mis-na-network-topology.yang
module mis-na-network-topology {
 namespace "http://com/att/mis/na-network-topology";
 prefix mis-na-network-topology;
<snip>
import ietf-inet-types { prefix inet; }
<snip>
 typedef ip-prefix-length { type uint8 { range 8..64; } }
<snip>
 container l3-network-topology {
   list l3-router {
     key "rtr-hostname";
     leaf rtr-hostname { type leafref {
          path “<>/rtr-hostname"; } } } }
<snip>
rpc activate-software-image {
 input { leaf image { type binary; } }
 output { leaf status { type string; } } }
<snip>
notification config-change {
  leaf operator-name {  type string; } }
```