# Yuma Tools® Installation Guide

YANG-Based Unified Modular Automation Tools

YUMA Package Installation

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## Yuma Tools Installation Guide

# 1 Preface

## 1.1 Legal Statements



## 1.2 Additional Resources

Depending on the version of Yuma you purchased, other documentation includes:

Yuma Tools® Quickstart Guide

Yuma Tools® User Manual

Yuma Tools® netconfd Manual

Yuma Tools® yangcli Manual

Yuma Tools® yangdiff Manual

Yuma Tools® yangdump Manual

Yuma Tools® Developer Manual

To obtain additional support you may send email to this e-mail address

support@netconfcentral.org

There are several sources of free information and tools for use with YANG and/or NETCONF.
The following section lists the resources available at this time.

### 1.2.1 WEB SITES

- **Netconf Central**
  - http://www.netconfcentral.org/
  - Yuma Tools Home Page
    - Free information on NETCONF and YANG, tutorials, on-line YANG module validation and documentation database
- **Yang Central**
  - http://www.yang-central.org
  - Free information and tutorials on YANG, free YANG tools for download
- **NETCONF Working Group Wiki Page**
  - http://trac.tools.ietf.org/wg/netconf/trac/wiki
  - Free information on NETCONF standardization activities and NETCONF implementations
- **NETCONF WG Status Page**
  - http://tools.ietf.org/wg/netconf/

  - IETF Internet draft status for NETCONF documents
- **libsmi Home Page**
  - http://www.ibr.cs.tu-bs.de/projects/libsmi/
  - Free tools such as smidump, to convert SMIv2 to YANG

### 1.2.2 Mailing Lists

- **NETCONF Working Group**
  - http://www.ietf.org/html.charters/netconf-charter.html
  - Technical issues related to the NETCONF protocol are discussed on the NETCONF WG mailing list. Refer to the instructions on the WEB page for joining the mailing list.
- **NETMOD Working Group**
  - http://www.ietf.org/html.charters/netmod-charter.html
  - Technical issues related to the YANG language and YANG data types are discussed on the NETMOD WG mailing list. Refer to the instructions on the WEB page for joining the mailing list.

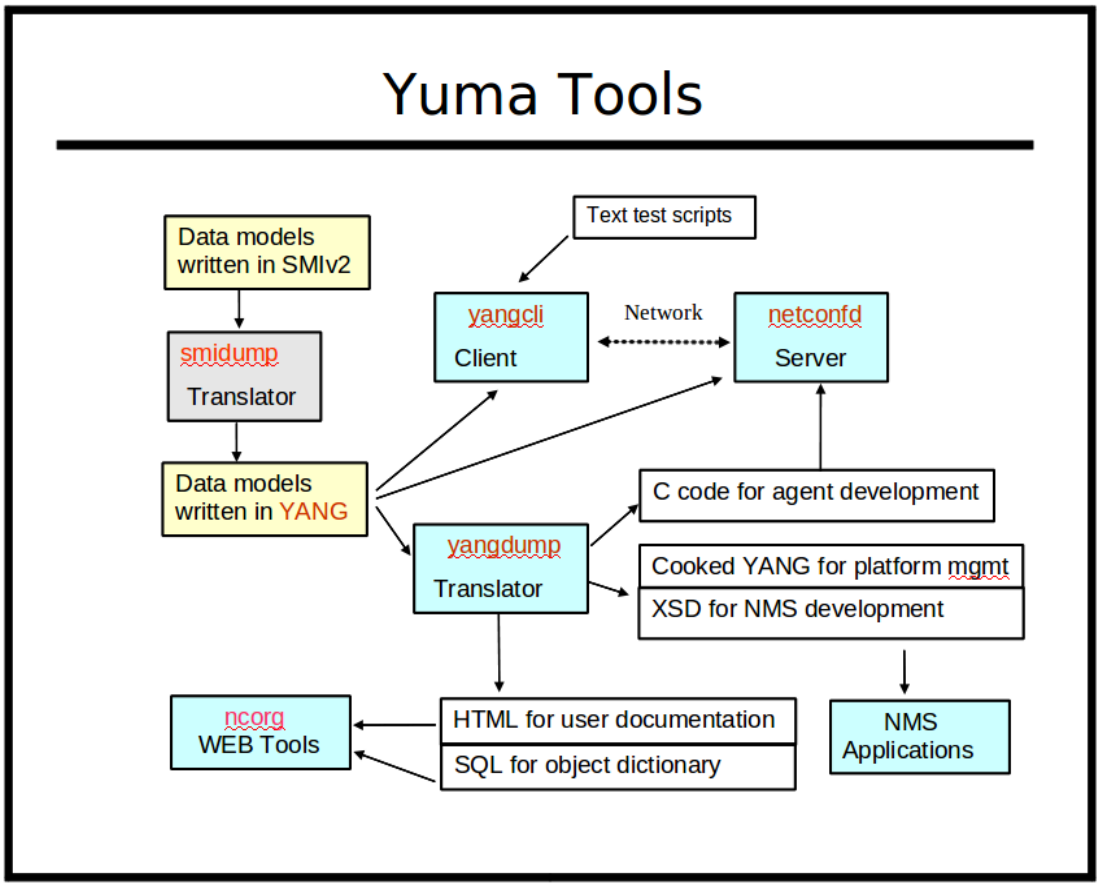
## 1.3 Conventions Used in this Document

The following formatting conventions are used throughout this document:

**Documentation Conventions**

| Convention | Description |
|---|---|
| **--foo** | CLI parameter foo |
| **<foo>** | XML parameter foo |
| **foo** | **yangcli** command or parameter |
| **$$FOO** | Environment variable FOO |
| **$$foo** | **yangcli** global variable foo |
| `some text` | Example command or PDU |
| some text | Plain text |

# 2 Introduction




Refer to section 3 of the Yuma User Manual for a complete introduction to Yuma Tools.

This section focuses on the client and server tools within the Yuma Tools programs.

## 2.1 Intended Audience

This document is intended for users of the Yuma Tools NETCONF client and server programs. It covers the installation of the Yuma Tools package.

# 3 Installation Requirements

The following requirements must be met for Yuma Tools to be installed.

## 3.1 Supported Platforms

The following platforms are supported at this time for the Yuma binary package:

- Ubuntu version 9.10 (32 bit x86 and 64-bit AMD)
- Fedora version 12 (32 bit x86)

## 3.2 External Packages

The following programs and libraries need to be available for Yuma Tools to work.

### 3.2.1 libxml2

The **libxml2** package is needed by the yuma package for some of the XML parsing functions.

### 3.2.2 ncurses

The **ncurses** library is needed by the yuma package for some terminal support.

It is not needed on Ubuntu versions of Yuma Tools because it is statically linked.

# 4 Quick Installation

This section describes how to use the platform package manager program to install the Yuma Tools programs.

## 4.1 Ubuntu

### 4.1.1 External Libraries

First, make sure the external libraries are installed.

```
mydir> dpkg --list libxml2
```

If the library is installed, the status will show 'ii libxml2', as in the example below:

```
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Cfg-files/Unpacked/Failed-cfg/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name           Version        Description
+++-==============-==============-============================================
ii  libxml2        2.7.6.dfsg-1ub GNOME XML library
mydir>
```

If the libxml2 library is not installed, then install it with following command:

```
mydir> sudo apt-get install libxml2
```

### 4.1.2 Install the Yuma Tools Package

Next, install the Yuma Tools package.  Here is an example.

The actual hardware platform identifier may be different:

```
mydir> sudo dpkg -i yuma-1.13-3.u1004.i386.deb
```

## 4.2 Fedora

### 4.2.1 External Libraries

First, make sure the external libraries are installed.

```
mydir> rpm -q libxml2 ncurses
```

If the packages are installed then a line will be printed for each package showing the version, such as in the following example (your versions may be different)

```
libxml2-2.7.6-2.fc12.i686
ncurses-5.7-3.20090207.fc12.i686
```

If a package is not already installed, then install it.  This example shows how to install both external libraries:

```
mydir> sudo yum install libxml2 ncurses
```

### 4.2.2 Install the Yuma Tools Package

Next, install the Yuma Tools package.  Here is an example.

The actual yuma revision and hardware platform may be different:

```
mydir> sudo yum localinstall yuma-1.13-3.fc12.i686.rpm
```

# 5 Installed Files

This section describes all the files and/or directories installed by Yuma Tools.

- **/usr/bin** directory contains the following programs:
  - yangcli
  - yangdiff
  - yangdump

    - make_sil_dir
- **/usr/sbin** directory contains the following server programs:
    - netconfd
    - netconf-subsystem
- **/usr/lib/yuma** directory contains the following file:
    - libtoaster.so
- **/usr/include/yuma** directory contains H files needed to compile SIL code so it can be loaded into the server at runtime:
    - ncx/*.h
    - agt/*.h
    - platform/procdefs.h
- **/usr/share/yuma/src/libtoaster** directory contains the following contents:
    - Makefile
    - src directory
        - Makefile
        - toaster.c
        - toaster.c.start
        - toaster.h
        - toaster.h.start
    - bin directory
    - lib directory
- **/usr/share/yuma/util** directory contains the following files:
    - makefile.sil
    - makefile-top.sil
- **/usr/share/doc/yuma** directory containing the following files:
    - AUTHORS
    - yumatools-legal-notices.pdf
    - README
    - yuma-installation-guide.pdf
    - yuma-quickstart-guide.pdf
    - yuma-user-cmn-manual.pdf
    - yuma-yangcli-manual.pdf
    - yuma-yangdiff-manual.pdf
    - yuma-yangdump-manual.pdf
    - yuma-netconfd-manual.pdf
    - yuma-dev-manual.pdf
- **/usr/share/doc/yuma** directory (Ubuntu only) containing the following files:
    - copyright

    - changelog.Debian
- **/usr/share/yuma/modules** directory contains all the YANG modules:
    - ietf/
    - netconfcentral/
    - yang/
    - test/
- **/usr/share/man/man1** directory contains the following files:
    - yangcli.1.gz
    - yangdiff.1.gz
    - yangdump.1.gz
    - netconfd.1.gz
    - netconf-subsystem.1.gz
    - make_sil_dir.1.gz
- **/etc/yuma** directory contains the following sample configuration files:
    - yangcli-sample.conf
    - yangdiff-sample.conf
    - yangdump-sample.conf
    - netconfd-sample.conf

# 6 Next Steps

## 6.1 More Documentation

- Yuma Tools Quickstart Guide:
    - **/usr/share/doc/yuma/yumatools-quickstart-quide.pdf**
- Yuma Tools Common User Manual:
    - **/usr/share/doc/yuma/yumatools-user-cmn-manual.pdf**
- Yuma Program Specific User Manual
    - **/usr/share/doc/yuma/yuma-netconfd-manual.pdf**
    - **/usr/share/doc/yuma/yuma-yangcli-manual.pdf**
    - **/usr/share/doc/yuma/yuma-yangdiff-manual.pdf**
    - **/usr/share/doc/yuma/yuma-yangdump-manual.pdf**
- Yuma Tools Developer Manual:
    - **/usr/share/doc/yuma/yumatools-dev-manual.pdf**

The unix 'man' program can be used to get documentation about each program.  For example:

- **man yangcli**

- **man yangdump**
- **man yangdiff**
- **man netconfd**
- **man netconf-subsystem**
- **man make_sil_dir**

Each program also has extensive help information available with the **--help** CLI parameter. For example:

- **yangcli --help**
- **yangdump --help**
- **yangdiff --help**
- **netconfd --help**

## 6.2 Running the Yuma Tools Programs

### 6.2.1 YANGCLI, YANGDUMP, YANGDIFF

If you are just using the Yuma client applications, then there is no further mandatory setup required.

- If a work directory is used, then the **$YUMA_HOME** environment variable needs to be defined. Refer to the user manual for details.
- If Yuma Tools is installed in a location other than the default location described above, then the **$YUMA_INSTALL** environment variable needs to be defined. Refer to the user manual for details.
- The following binary applications are available:
  - **/usr/bin/yangcli**: NETCONF-over-SSH client application
  - **/usr/bin/yangdump**: YANG compiler
  - **/usr/bin/yangdiff**: YANG compare program
  - **/usr/bin/make_sil_dir**: Bash script to create a new SIL work directory. Refer to the Yuma Tools Developer Manual for details.

### 6.2.2 NETCONFD AND NETCONF-SUBSYSTEM

The Yuma server does not automatically start running when installed. This will be supported in a future release.

The following steps must be taken to start the **netconfd** server:

- You must modify the **/etc/ssh/sshd_config** file, and add the 'netconf' subsystem, as described in the user manual.If the yuma package was installed in a non-default location, then the path to the netconf-subsystem will be different than the example below. The following commands must be present:

```
Port 22
Port 830
```

```
Subsystem netconf /usr/sbin/netconf-subsystem
```

- Start the **netconfd** server, as described in the user manual or quickstart guide. This can be in the foreground or the background. If it is in the background, then the '**--log**' CLI parameter should be provided, as shown below:

```
mydir> /usr/sbin/netconfd --log=$HOME/mylog &
```

- Restart the SSH server. This is a platform-specific task. Refer to the **sshd** manual page for your system for more details. This step may need to be run as root or with the 'sudo' program.

```
Fedora 12 version

mydir> sudo  /etc/rc.d/init.d/sshd restart
```

```
Ubuntu 9.10 version:

mydir> sudo  /etc/init.d/ssh restart
```