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# Installing ROVM

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## Abstract

This document describes how to install ROVM packages which consists of ROVM Server, ROVM Client, ROVM Interface, ROVM Compiler, ROVM Library. ROVM is short for Remote Object Virtual Machine.

## Contents

<b>1</b>	<b>Homepage</b>	<b>2</b>
<b>2</b>	<b>Before installation</b>	<b>2</b>
2.1	The condition of usage . . . . .	2
2.2	Official supported environment . . . . .	2
<b>3</b>	<b>ROVM Server Installation</b>	<b>3</b>
3.1	Installing OpenSSL . . . . .	3
3.2	Download Server . . . . .	3
3.3	'configure' and 'make' . . . . .	3
3.4	Installing ROVM Server . . . . .	4
3.5	Configuring ROVM Server . . . . .	4
3.6	Executing ROVM Server . . . . .	4
<b>4</b>	<b>ROVM Library Installation</b>	<b>5</b>
<b>5</b>	<b>ROVM Client Installation</b>	<b>6</b>
5.1	Requisites . . . . .	6
5.2	Downloading Client . . . . .	6
5.3	Executing . . . . .	6
<b>6</b>	<b>ROVM Interface Installation</b>	<b>7</b>
6.1	Before installation . . . . .	7
6.2	Installing OpenSSL . . . . .	7
6.3	Downloading the package . . . . .	7
6.4	Compile and Install . . . . .	7
<b>7</b>	<b>ROVM Compiler Installation</b>	<b>8</b>
7.1	Before installation . . . . .	8
7.2	Requisites . . . . .	8
7.3	Downloading Compiler . . . . .	8
7.4	Compile . . . . .	8

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# 1 Homepage

ROVM project is a part of 'envlang' project. Currently, The homepage of ROVM located at KLDP.net (<http://kldp.net>). The address of homepage is like below.

```
http://envlang.kldp.net
```

Thanks KLDP<sup>1</sup> for supplying the space to us.

## 2 Before installation

### 2.1 The condition of usage

If you use ROVM on your system, It means that you agree the conditions like below.

- As ROVM Server is server application, Always ROVM Server open a network port for listening. If there are some vulnerabilities on ROVM Server, a cracker can execute arbitrary commands on your system as a privilege which ROVM Server runs as. We don't take the responsibility for these accidents which be damaged caused by these penetration.
- We don't take the responsibility for other misuses of ROVM-related application.

### 2.2 Official supported environment

At now, ROVM packages consist of 5 packages. The description of these packages are like below.

- ROVM Server  
It's a server application that it runs all of ROVM programs.
- ROVM Library  
It's a library which consist of core classes. It's ok whether you install this package or not. But you can only use some few functions.
- ROVM Client  
It's a application to communicate with/debug/test ROVM Server.
- ROVM Interface  
You can just think ROVM Interface as C version of ROVM Client. It's not for debugging.
- ROVM Compiler  
It's very simple application for ROVM Sever to make a binary file which follow the standard "ENVLANG File Format".

In cases of ROVM Server, ROVM Library and ROVM Interface, These supports environment now like below.

- Linux (i386)

At other environments except upper cases, we don't guarantee.

In cases of ROVM Client and ROVM Compiler, It can be executed on any systems which supports python because it made by python. It tested some enviroment like below.

- Windows 2003 (i386)

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<sup>1</sup><http://kldp.org>

## 3 ROVM Server Installation

If you don't want to install ROVM Server, just skip this section.

ROVM Server always opens a network port (default port is 4390) for listening. If there are some vulnerabilities on ROVM Server, a cracker can execute some arbitrary commands on your system as a privilege which ROVM Server runs. You need keep the latest version of ROVM server if you want to avoid it.

### 3.1 Installing OpenSSL

After ROVM Server v0.1.35a, All communications between ROVM Server and ROVM Client use encrypted packets. So you must install OpenSSL before install ROVM Server.

You can download a latest version of OpenSSL at <http://www.openssl.org>

```
$ tar xvvzf openssl-0.9.8a.tar.gz
$ cd openssl-0.9.8a
$ ./configure
$ make
$ make install
$
```

At below, we assume that the path of OpenSSL is `/usr/local/ssl`.

### 3.2 Download Server

We recommends keeping the latest version of ROVM Server to you. You can find the latest version at below site.

```
http://kldp.net/frs/?group\_id=700
```

Download ROVM Server file at temporary directory.

```
$ mkdir tmp
$ cd tmp
$ wget http://kldp.net/frs/download.php/3160/rovm-latest.tar.bz2
$ tar xvvjf rovm-latest.tar.bz2
$ cd rovm
```

### 3.3 'configure' and 'make'

Now you need execute `./configure` command. If you are ROVM developer, we recommend adding `CFLAGS` to you for more easier debugging. You don't input any options, then default options would be used.

```
$ CFLAGS='-g -O0' ./configure
```

If you are not ROVM developer, just types like below.

```
$ ./configure
$
```

If you installed OpenSSL at different directory, you should set `--with-ssl` option.

```
$ ./configure --with-ssl=/usr/local/ssl2
```

Let builds ROVM Server as typing ‘make’

```
$ make
```

### 3.4 Installing ROVM Server

We finished building ROVM Server. If you succeed in building, you can see `src/rovm` file.

```
$ ls -l src/rovm
-rwxr-xr-x 1 weongyo weongyo 1786531 2006-01-30 08:21 src/rovm
```

If you install it on your system, just type like below

```
$ make install
$
```

If you had been set the `prefix`, it will be installed at the `prefix`, If you didn't, it will be installed at default directory, `'/usr/local/rovm'`

If you want to use ROVM Library, we recommend that you configure your “Class Root” value correctly before you install ROVM Library.

### 3.5 Configuring ROVM Server

There is a “Configuring ROVM Server” document which describe how you can set ROVM Server up. See the document.

### 3.6 Executing ROVM Server

Let execute ROVM Server. If you did not install ROVM Library yet. Install it first.

When you run ROVM Server, it will ask the password of the certificate. If you use a default certificate which be delivered ROVM Server package, your default password is “rovmserver”. (If you want to use your own certificate, see the “Configuring ROVM Server” document.

```
$ cd /usr/local/rovm
$ bin/rovm
ROVM Server mod_ssl/0.1.35a (Pass Phrase Dialog)
Some of your private key files are encrypted for security reasons.
In order to read them you have to provide the pass phrases.

Server localhost:4390 (RSA)
Enter pass phrase:
```

**!Warning!** Always ROVM Server open a network port for listening, we recommend that you use a account which have very low privilege like ‘nobody’

## 4 ROVM Library Installation

*(If you want to load the class or extension module on ROVM Server, You should install this package first. If you don't want to do it, just skip it.)*

In this section, we mention how to install core library on ROVM Server.

You can download the latest version at our homepage.

```
$ cd /tmp
$ wget http://kldp.net/frs/download.php/3185/rovmlib-0.0.1a.tar.gz
$ tar xvzvf rovmlib-0.0.1a.tar.gz
$ cd rovmlib-0.0.1a
```

To install ROVM Library, you should install ROVM Server first because ROVM Library depends on some header files and libraries of ROVM Server which be used to compile the extension module.

- `el.h`  
A extension module must include `el.h` file in their body because `el.h` file include every prototypes and structures which needs to make the extension module.
- `libel.so`  
A shared library which have real-code functions.

When you execute `configure` command, you must pass the location of ROVM Server using `--with-rovm` option. If you installed ROVM Server at `/usr/local/rovm`, input like below.

```
$ ./configure --prefix=/usr/local/rovm/classroot --with-rovm=/usr/local/rovm
```

And `--prefix` value must same with “Class Root” value of ROVM Server. If it isn't same, some errors would be occured during ROVM Server runs.

Let compile and install library.

```
$ make
$ make install
```

If you meet below warning messages during you install ROVM Library, just skip it.

```
-----  
Libraries have been installed in:  
  /usr/local/rovm/classroot/core
```

If you ever happen to want to link against installed libraries in a given directory, LIBDIR, you must either use libtool, and specify the full pathname of the library, or use the '-LLIBDIR' flag during linking and do at least one of the following:

- add LIBDIR to the 'LD\_LIBRARY\_PATH' environment variable during execution
- add LIBDIR to the 'LD\_RUN\_PATH' environment variable during linking
- use the '-Wl,--rpath -Wl,LIBDIR' linker flag
- have your system administrator add LIBDIR to '/etc/ld.so.conf'

See any operating system documentation about shared libraries for more information, such as the ld(1) and ld.so(8) manual pages.  
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## 5 ROVM Client Installation

In this section, we mention how to install ROVM Client which be used for communicating with ROVM Server.

### 5.1 Requisites

In case of ROVM Client, there are some requisites to work properly. Below packages must be installed on your system.

- Upper version of Python 2.2

### 5.2 Downloading Client

You can download the latest version of ROVM Client at below site, in the same way as ROVM Server.

```
http://kldp.net/frs/?group_id=700
```

Download the file and extracts all files at temporary directory.

```
$ mkdir tmp  
$ cd tmp  
$ wget http://kldp.net/frs/download.php/3159/rovmclient-0.0.1a.zip  
$ unzip rovmclient-0.0.1a.zip  
$ cd rovmclient
```

### 5.3 Executing

You must install the upper version of python 2.2 on your system because ROVM Client's code is based on python.

```
$ python rovmclient.py
```

If you can see '>>>' prompt on your screen, it may works well.

## 6 ROVM Interface Installation

In this section, we mention how to install ROVM Interface on your system which communicates with ROVM Server.

### 6.1 Before installation

*If you want to make a application which communicates with ROVM Server, you need to install it, But you don't want to do it, just skip this section.*

This package just supports few OSs. There are no guarantee working well on other system except below OS.

- ix86 (Linux)

### 6.2 Installing OpenSSL

After ROVM Server v0.1.35a, All communications between ROVM Server and ROVM Client use encrypted packets. If you want to communicate ROVM Server whose version is upper v0.1.35a, you must install OpenSSL before install ROVM Interface.

You can download a latest version of OpenSSL at <http://www.openssl.org>

```
$ tar xvzvf openssl-0.9.8a.tar.gz
$ cd openssl-0.9.8a
$ ./configure
$ make
$ make install
$
```

At below, we assume that the path of OpenSSL is `/usr/local/ssl`.

### 6.3 Downloading the package

```
$ mkdir tmp
$ cd tmp
$ wget http://kldp.net/frs/download.php/3172/rovminterface-latest.tar.bz2
$ tar xvjvf rovminterface-latest.tar.bz2
$ cd rovminterface
```

### 6.4 Compile and Install

The process of installation is same with other package's installation.

```
$ ./configure --prefix=/home/weongyo/rovminterface
$ make
$ make install
```

If you want to install ROVM Interface at another directory, you need to set `--prefix` value because the default installation path is `/usr/local`.

If you installed OpenSSL at different directory, you should set `--with-ssl` option.

## 7 ROVM Compiler Installation

In this section, we mention how to install ROVM Compiler which helps us to make “ENVLANG File Format”. You don’t need to install it, just skip this section.

If you need some information about “ENVLANG File Format”, you can find documents at homepage.

### 7.1 Before installation

ROVM Compiler is very simple compiler and very dirty. It just made for file format testing.

So, we don’t want to support it.

### 7.2 Requisites

In case of ROVM Compiler, there are some requisites to work properly. Below packages must be installed on your system.

- Upper version of Python 2.2

### 7.3 Downloading Compiler

You can download the latest version of ROVM Compiler at our homepage.

```
http://kldp.net/frs/?group_id=700
```

Download ROVM Compiler and extracts all file at temporary directory.

```
$ mkdir tmp
$ cd tmp
$ wget http://kldp.net/frs/download.php/3172/rovmcompiler-0.0.1a.tar.bz2
$ tar xvjf rovmcompiler-0.0.1a.tar.bz2
$ cd rovmcompiler
```

### 7.4 Compile

You must install the upper version of python on your system because ROVM Compiler is based on python.



Normally when you execute it, the following messages are printed.

```
$ python rovmcompiler.py
rovmcompiler.py: no input files.
```

If you want to compile something, there are some examples at 'tests' directory.

```
.package test

.class ABCDEF
  .def __init__ (S)V
    nop
  .defend

  .def abc (SII)I
    iload 1
    iload 2
    iadd
    ireturn
  .defend
.classend
```

If you want to compile it, run like below.

```
$ python rovmcompiler.py tests/1.rovms
```