Advantech Linux 3.0

User Manual

V1.0.5

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1. About This Manual

Thank you for using Advantech product and AdvLinux. This manual is a user manual of AdvLinux3.0. This manual may be copied and distributed in any medium, either commercially or non-commercially.

2. AdvLinux Overview

AdvLinux3.0 is an embedded Linux designed for Advantech embedded device, and it is optimized for the Advantech devices including UNO, TPC and ITA. AdvLinux3.0 based on and compatible with Fedora Core 18. AdvLinux3.0 can install on all Advantech devices in theory, but only test on UNO, TPC and ITA.

2.1. Hardware Support List

We currently support the following products: UNO-1170A, UNO-1172A, UNO-2172, UNO-2173, UNO-2174A, UNO-2178A, UNO-2182, UNO-2184G, UNO-3072, UNO-3072LA, UNO-3074, UNO-3074A, UNO-3082, UNO-3084, UNO-4671, UNO-4673A, UNO-4683, TPC-1250H, TPC-1270H, TPC-1550B, TPC-1750HB, TPC-1770H, TPC-8100TR, UNO-1483G, UNO-2272G, UNO-2362G, UNO-2483G, UNO-3483G.

2.2. Kernel Version

The real time kernel version of Advlinux3.0.5 is 3.12.6, while the non-realtime kernel version is 3.11.10. AdvLinux3.0.5 can query kernel version by providing the command “devinfo” and the graphic tool “About Advlinux” in chapter 5.2.7.

2.3. Main Features

AdvLinux3.0 has many important features coming from industrial customers. Here we list some important features and give a brief introduction. We will explain them in detail in later sections.

- Provide Embedded QT(based on frame buffer) runtime environment
  The user can run embedded QT application based on frame buffer

- Real time kernel

The user can install real time kernel to improve the real time performance.

- Faster boot up.
  AdvLinux3.0 optimizes boot up time for Advantech device, so it boots up faster than common Linux distribution.
  Example: UNO-2184G
  Text mode boot time: 15s.
  X-windows mode boot time: 25.63s.

- Auto login
  Installation offers an auto login option, if the user chooses it, the user will be able to auto login the AdvLinux3.0 after installation.

- USB installation support
  The user can use UltraISO software to burn AdvLinux3.0 ISO to USB disk with USB-HDD or USB-ZIP according to BIOS boot configuration. Then the user can install AdvLinux3.0 from the USB disk.

- Hardware auto detect
  When installing AdvLinux3.0, installation will auto detect hardware and install all drivers it needs, so when completed installation, no more driver need unless user add some other devices such as Advantech data collecting card to embedded device.

- Online Installation and Update
  AdvLinux3.0 can install and update software online with the yum command; it can extend the AdvLinux3.0's functions.

- Provide development environment
  Though AdvLinux3.0 is an embedded Linux, it supports basic development if user can choose to install the Professinal System

- VNC support
  The AdvLinux3.0 provide remote desktop service named VNC server, user can use VNC client to connect the AdvLinux3.0 remotely through internet to get the devices desktop and control the remote device.

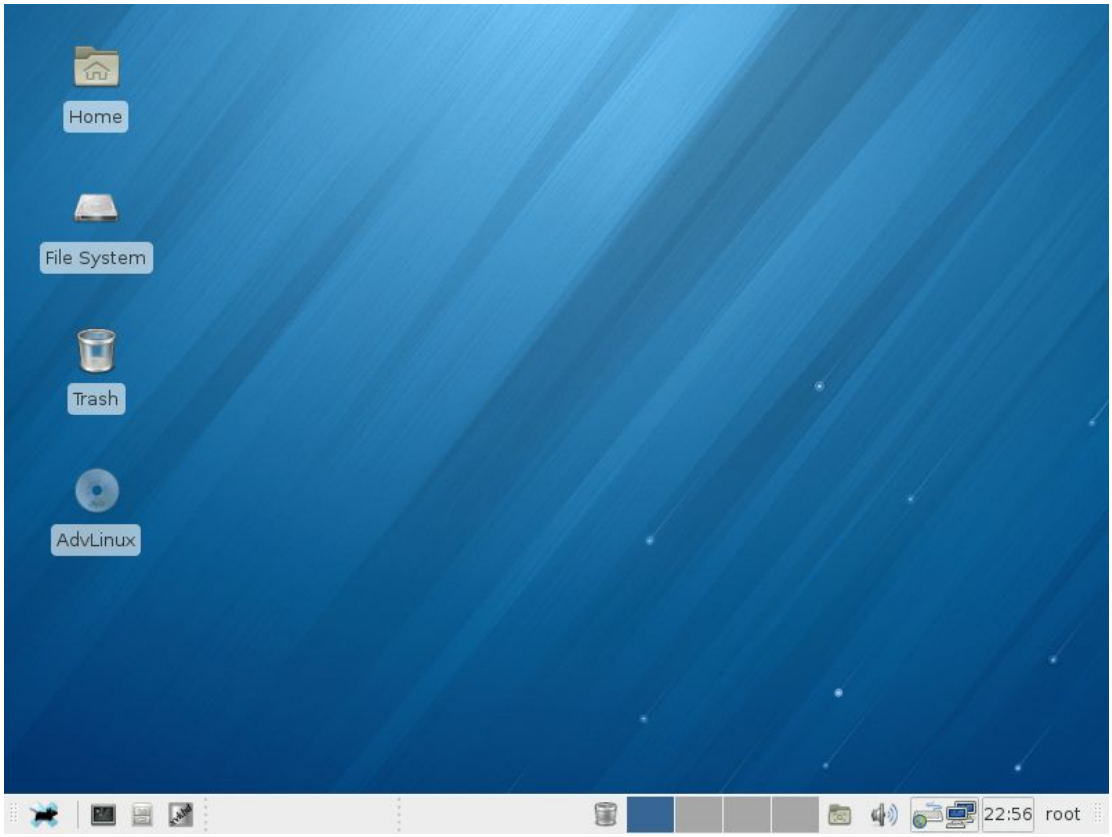
- Read-only filesystem
  AdvLinux3.0 can mount root file system with read-only mode according to set grub parameters.

- Systemd
  The AdvLinux3.0 boots service parallelizing with systemd. Systemd is a system and service manager for Linux, compatible with SysV and LSB init scripts.

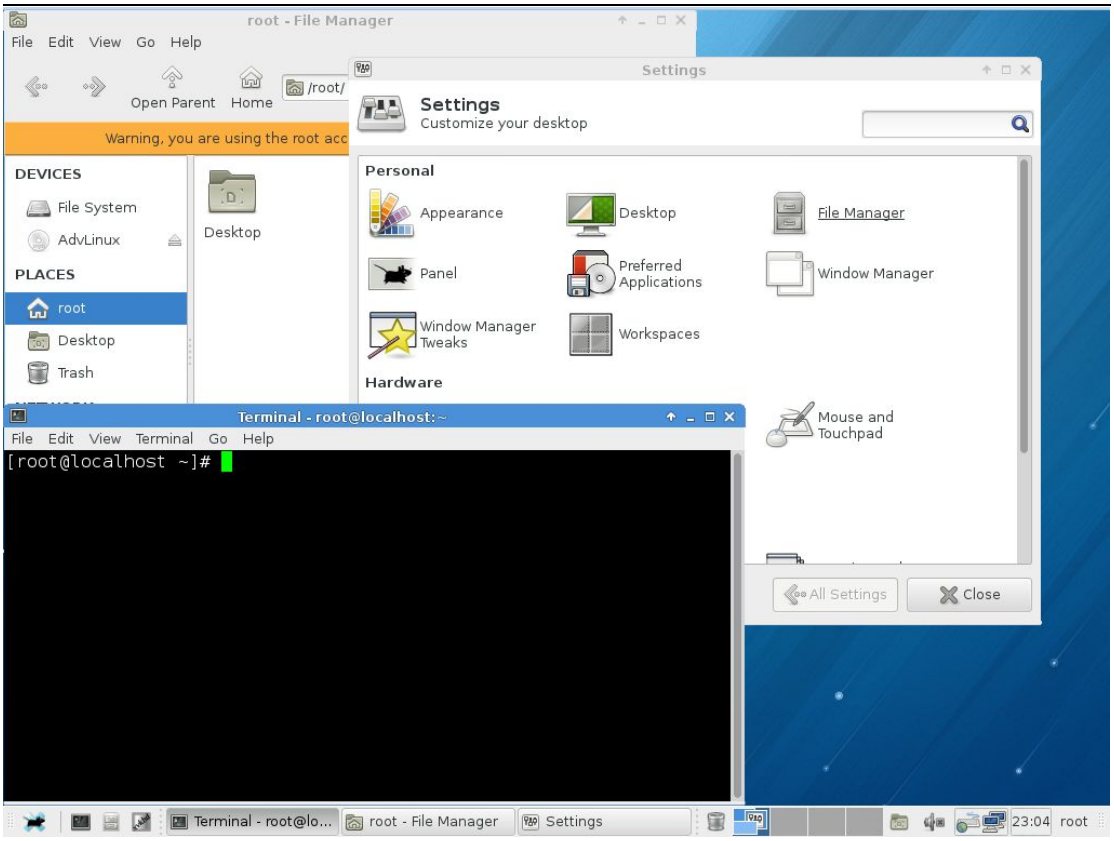
Systemd provides aggressive parallelization capabilities to shorten booting time.

- PTP daemon
  The AdvLinux3.0 includes the PTP daemon. The PTP daemon implements the Precision Timer protocol (PTP) as defined by the relevant IEEE1588 standard which is applied to synchronize clocks throughout a computer network.

2.4. AdvLinux Screenshot



Picture 2-1 Default Desktop



Picture 2-2 Desktop Environment

3. Installation Guide

In this chapter, we will introduce the installation guide step by step.

3.1. System Requirements

Recommend requirements:
Storage size:

1 G or more for Text system
2 G or more for graphic system
2.5 G or more for profession system

Memory size:

1G or more

3.2. Prepare for Installation

We suggest that the user make a copy of data in storage medium in order to prevent data damage in case of improper operation during installation.

If other operating systems have already been installed in computer and the user should determine whether AdvLinux3.0 remains in the computer together with other operating systems previously installed. If yes, user should know the system partition of the previous system and then partition the disk manually in installation.

Advantech Linux 3.0 can install from USB DVD Driver and USB disk.

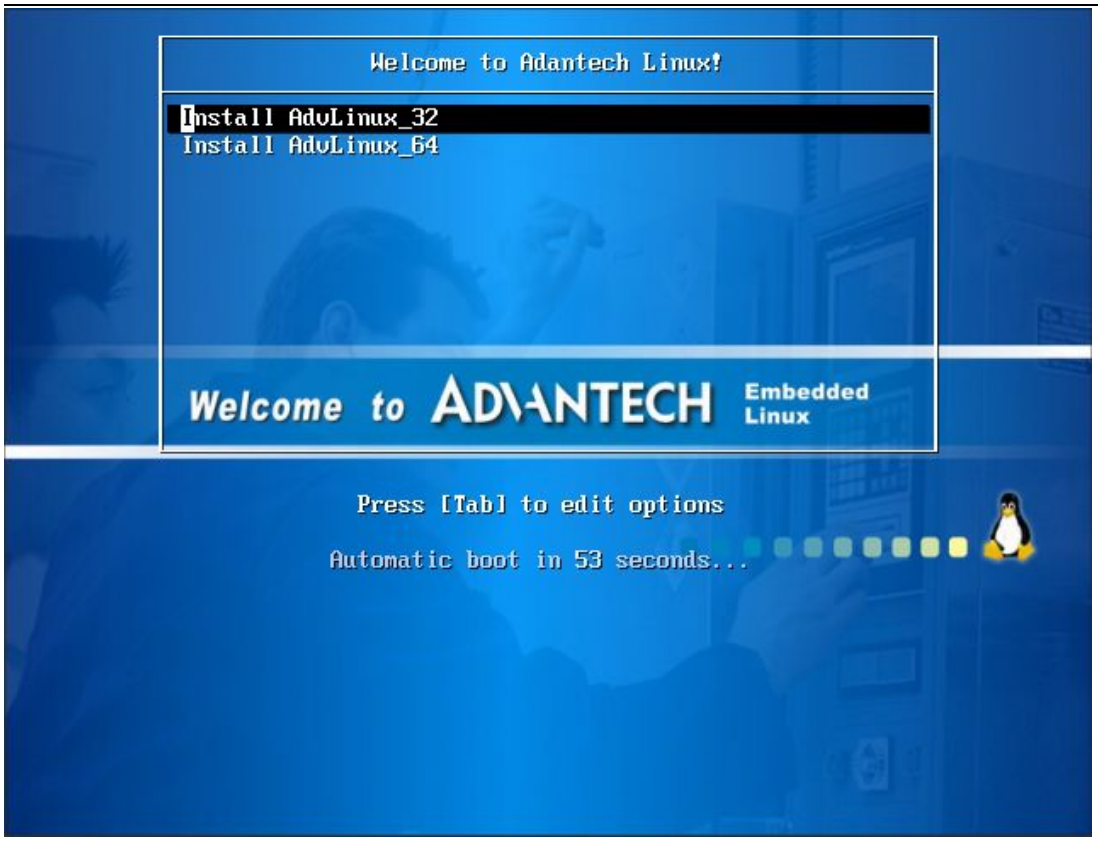
- Install AdvLinux3.0 from the USB DVD Driver:
  Burn the AdvLinux3.0 ISO to DVD disk. Then insert the DVD disk of AdvLinux3.0 into the CD driver, set the BIOS to boot from CDROM and reboot the computer.
  Note: UNO, TPC and ITA have no build-in CDROM, so the user should connect to an external USB DVD driver to target device.

- Install AdvLinux from the USB disk:
  If there is no USB DVD driver, user can also install the AdvLinux3.0 from USB disk, we will introduce the way in the tail of this section.

3.3. Installation Step

3.3.1. Step 1: Choose installation mode

If boot from DVD Driver successfully, the first installation step is shown as below:



Picture 3-1 Select the installation mode

The DVD includes both 32-bit and 64-bit Linux OS.

- 32bit Linux:
  Select “Install AdvLinux_32” and press Enter (or press Enter directly) to install 32 bit Linux
- 64bit Linux:
  Select “Install AdvLinux_64” and press Enter to install 64 bit Linux.

Note:

32bit OS can run on 32bit and 64bit device, but 64 bit OS can only install on 64 bit device. The 32bit installation and 64bit installation steps are the same, so, here we only introduce the 32 bit installation.

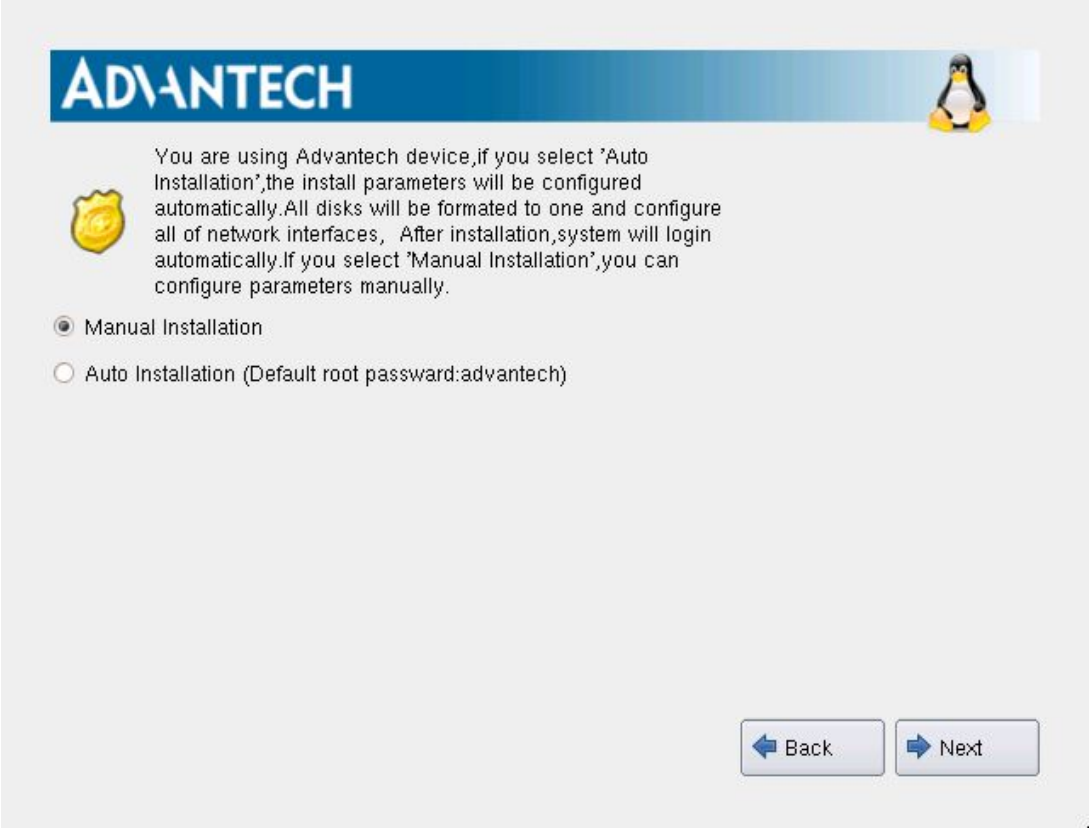
3.3.2. Step 2: Welcome page for graphic installation

If the installation mode is selected, the following step will be shown. Then please follow the introductions step by step to complete the installation.

Click <Next> to continue the installation.

Picture 3-2 Welcome

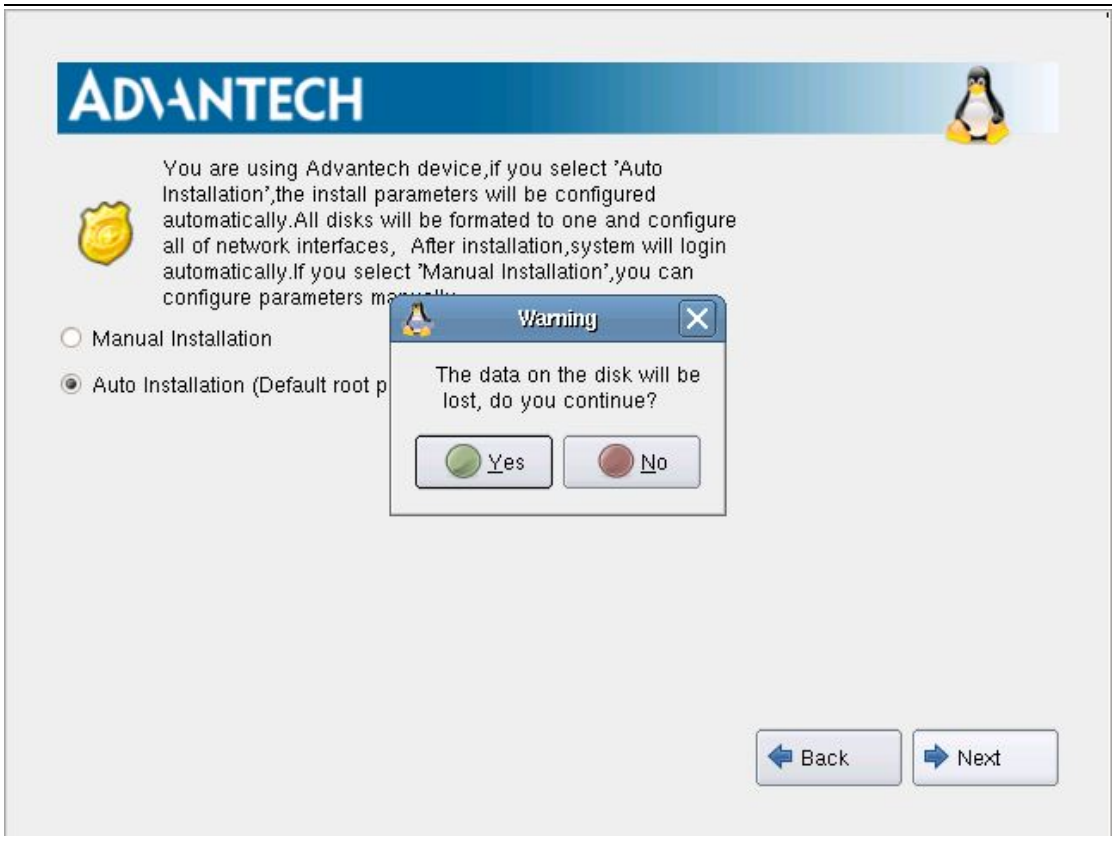
3.3.3. Step 3: Select installation process types



Picture 3-3 Select installation process type

Here are two installation types: “Auto Installation” and “Manual Installation”. If choosing “Manual installation”, user will configure the system step by step which include partition, hostname, password, time and so on. If choosing “Auto installation”, these configuration is set by default, of course, user can modify them after the installation is completed and OS boot up.

Note: if choosing “Auto installation”, it will format the entire disk. All the data in the disk will be lost.



Picture 3-4 Select Auto installation process type

Click <Next> to continue the installation.

If the user chooses Auto installation, please go to Step8 directly.

3.3.4. Step 4: Hostname configuration

Picture 3-5 Set computer name

Set the hostname and click <Next>.

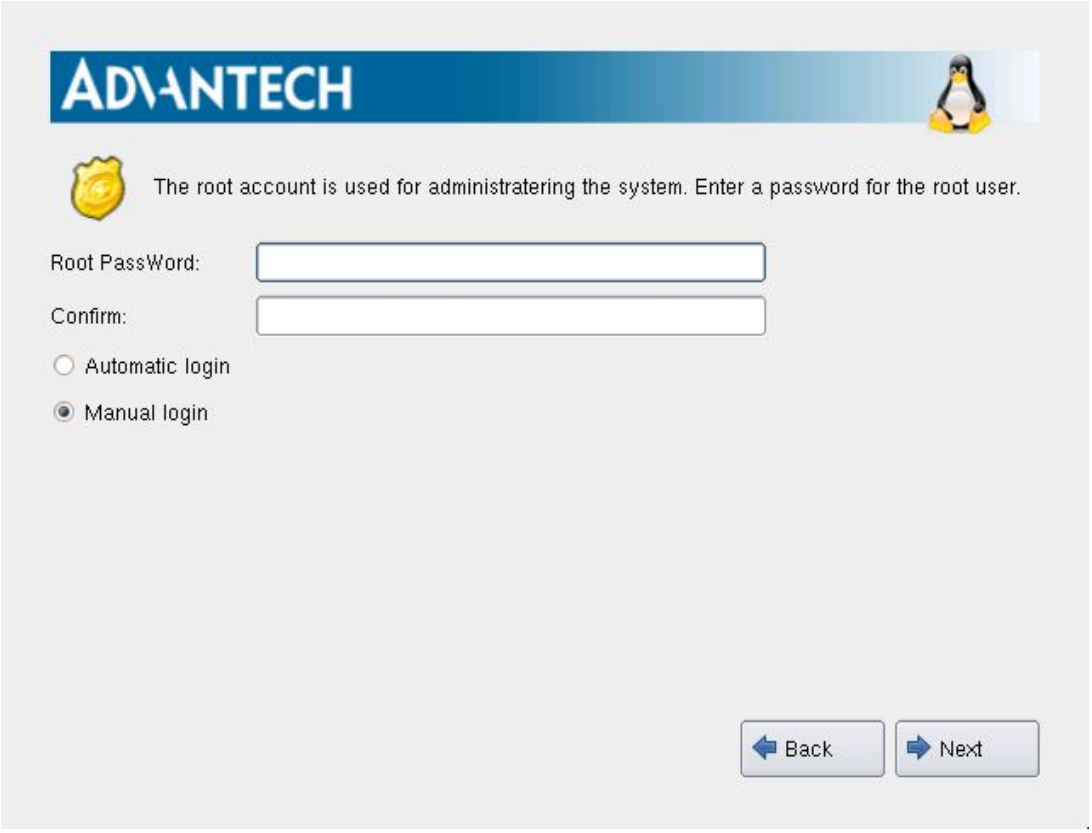
3.3.5. Step 5: Time zone configuration

Picture 3-6 Time Zone configuration

The user can click the yellow marks (when the yellow mark is clicked, the information about the selected address will be shown in the tool tip on the screen). The user can also select the time zone by using the list. Select “System clock uses UTC” to configure the system clock as GMT (Greenwich Mean Time).
Click <Next>. Users could set the password of root user.

3.3.6. Step 6: Root password configuration

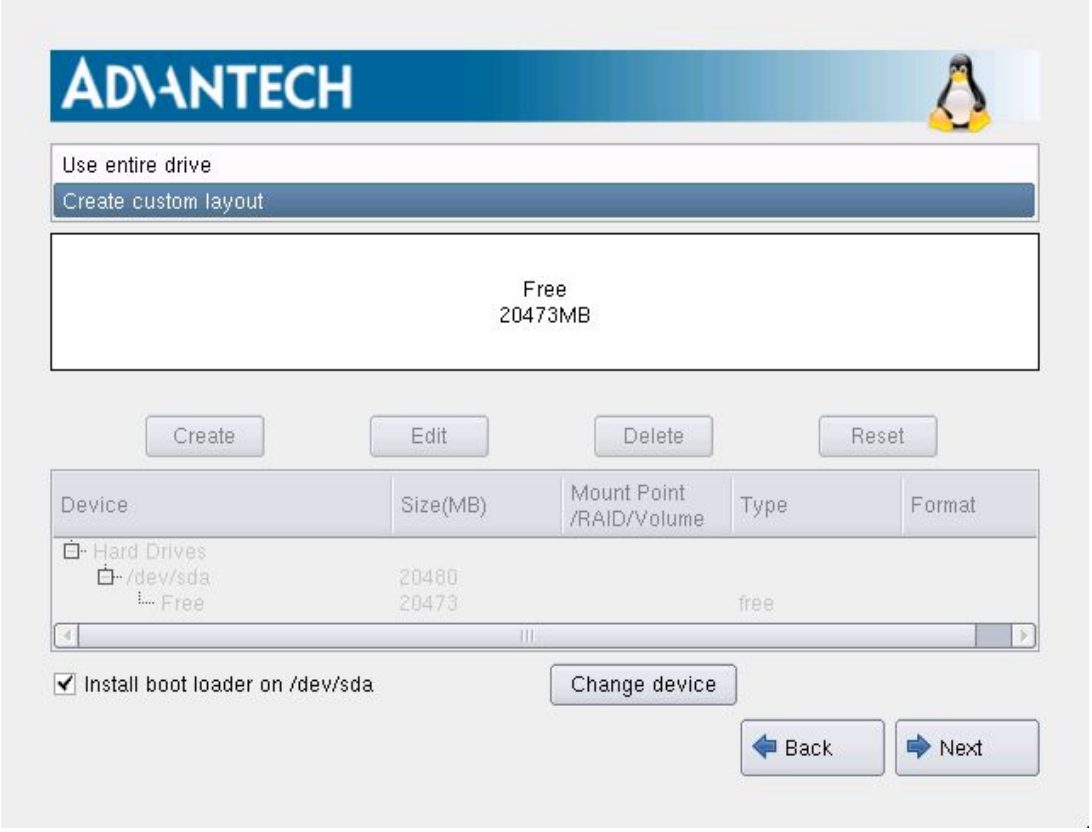
In this step, the user should set root password and select “Automatic login” or “Manual login”. If the user selects “Automatic login”, the AdvLinux can auto login and there is no need to enter the password. The password of “root” is “advantech”. In addition, AdvLinux3.0 provides a normal user whose username and password are “advantech”.



Picture 3-7 Set Root Passwords

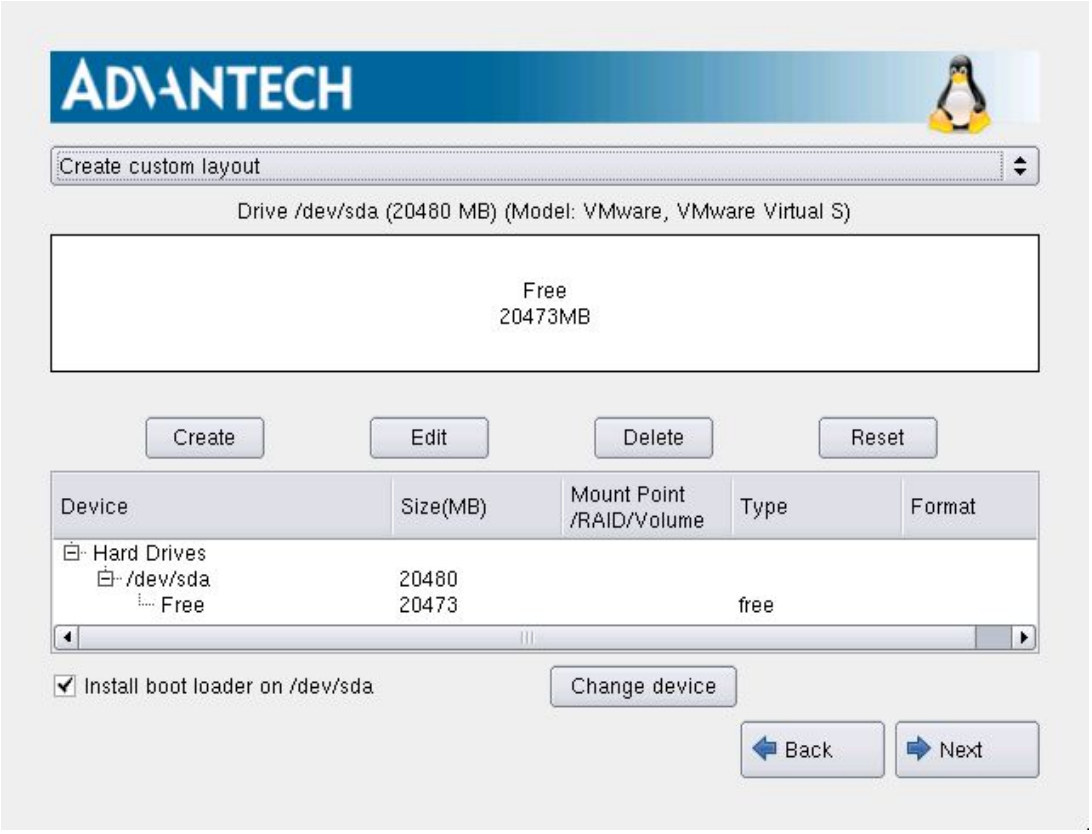
After the selection, click <Next> to continue the installation.

3.3.7. Step 7: Disk partition



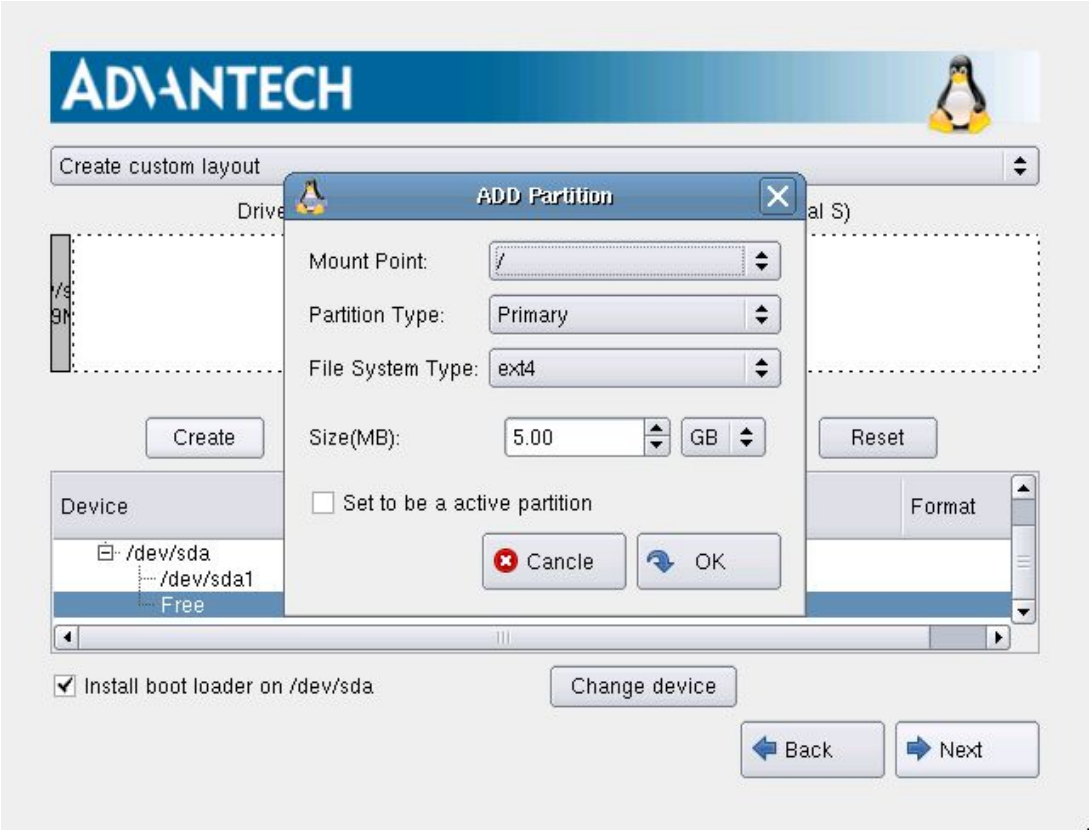
Picture 3-8 Disk partitioning type selection interface

The user should choose the suitable partition type. If “Create custom layout” is selected, the following picture will appear:



Picture 3-9 Manual partitioning interface

Manual partitioning is convenient. The user can edit, build and delete partitions as well as specify the size of partitions, format file system and set the mount point.
Create a new partition:
To install a system on a new partition, press the “Create” button on the main window to build a new partition. A similar dialog box will pop up, allowing the user to specify partition parameters. Advantech Linux uses ext4 file system type by default.



Picture 3-10 Create a new partition

Note: For more excellent performance, build a swap partition if the disk space is sufficient. The space of this partition should be the same with memory or better twice the memory space. If user selects "Auto installation" or "Use entire driver" mode, the installation will not build a swap partition.

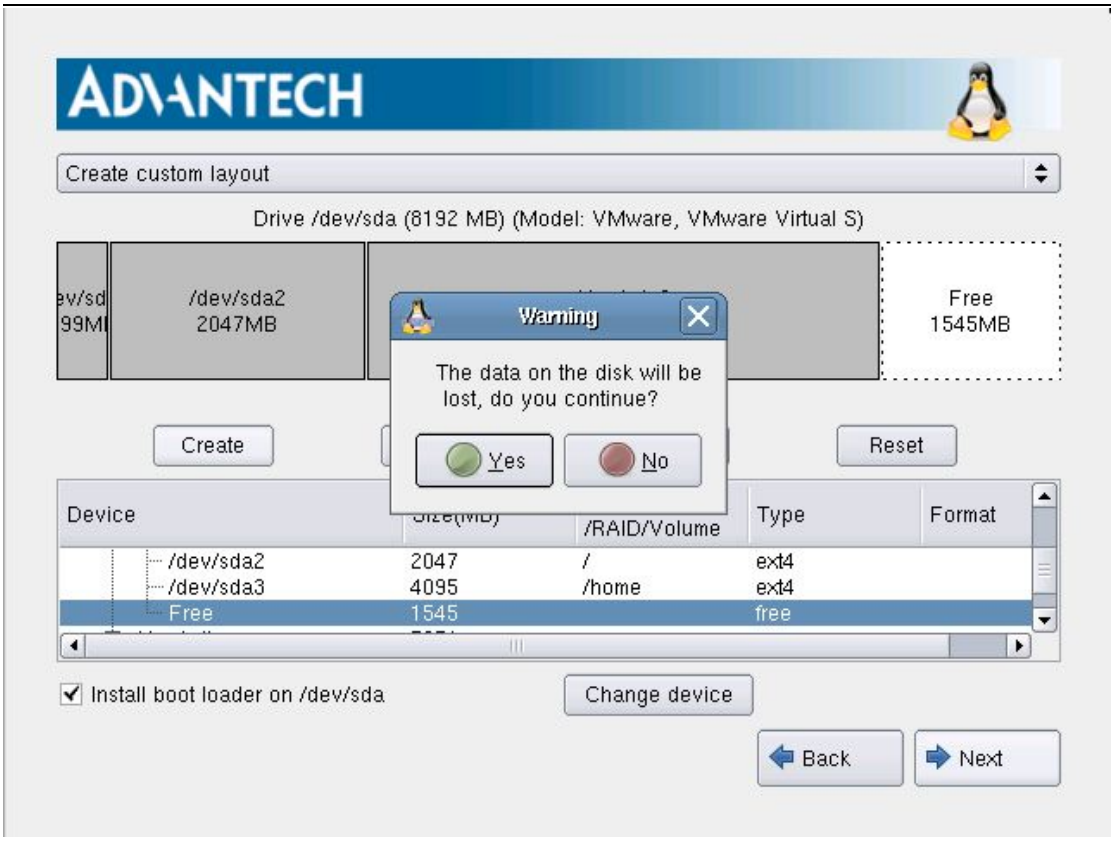
- Delete a partition:

Press "Delete" button on the main window to delete the selected partitions.

- Edit a partition:

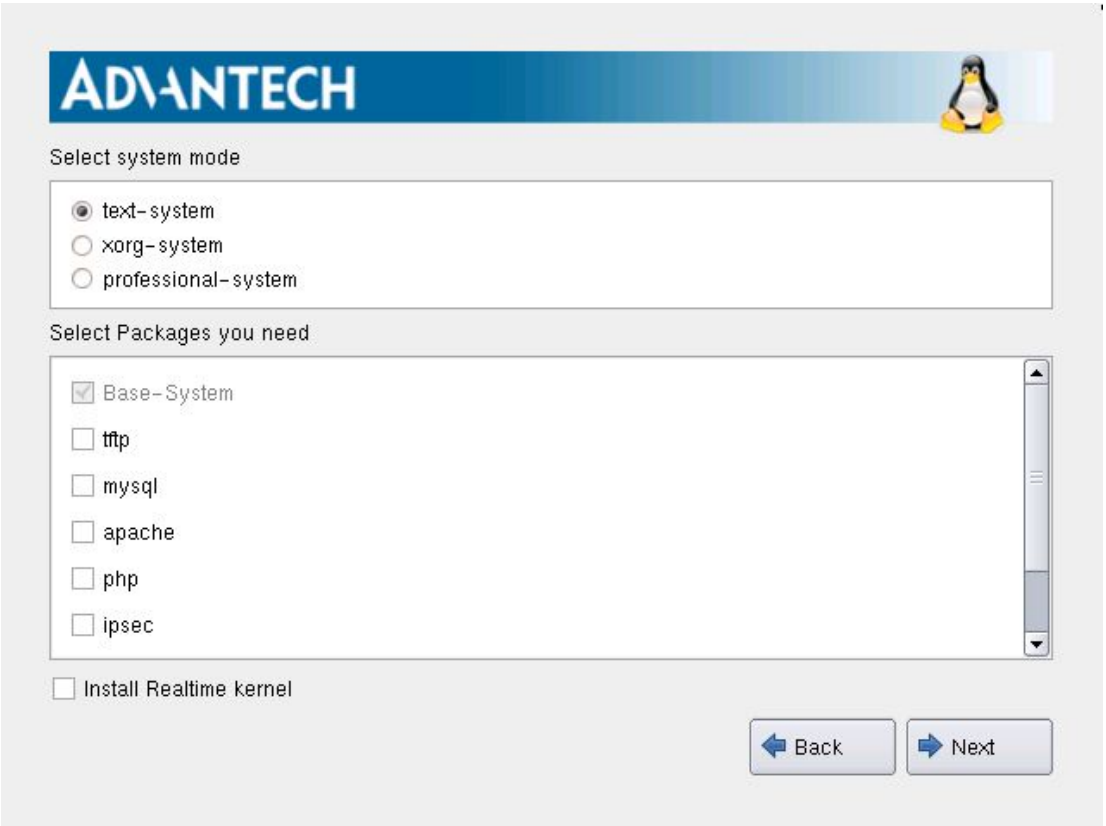
Edit the selected partition parameters. Select the existing partition to install the system.

While custom layout is finished， click <Next>, a warning box will be shown. Then click <Yes> to format the disk.



Picture 3-11 Format the disk

3.3.8. Step 8: Select OS type to install



Picture 3-12 Installation mode selection interface

There are three installation types:

- Text System installation mode

Includes elementary and necessary components.

- Xorg System installation mode

Includes X windows using Xorg and XFCE windows manager.

- Professional System mode installation:

Includes X windows using Xorg and XFCE windows manager, basic development environment, more tools.

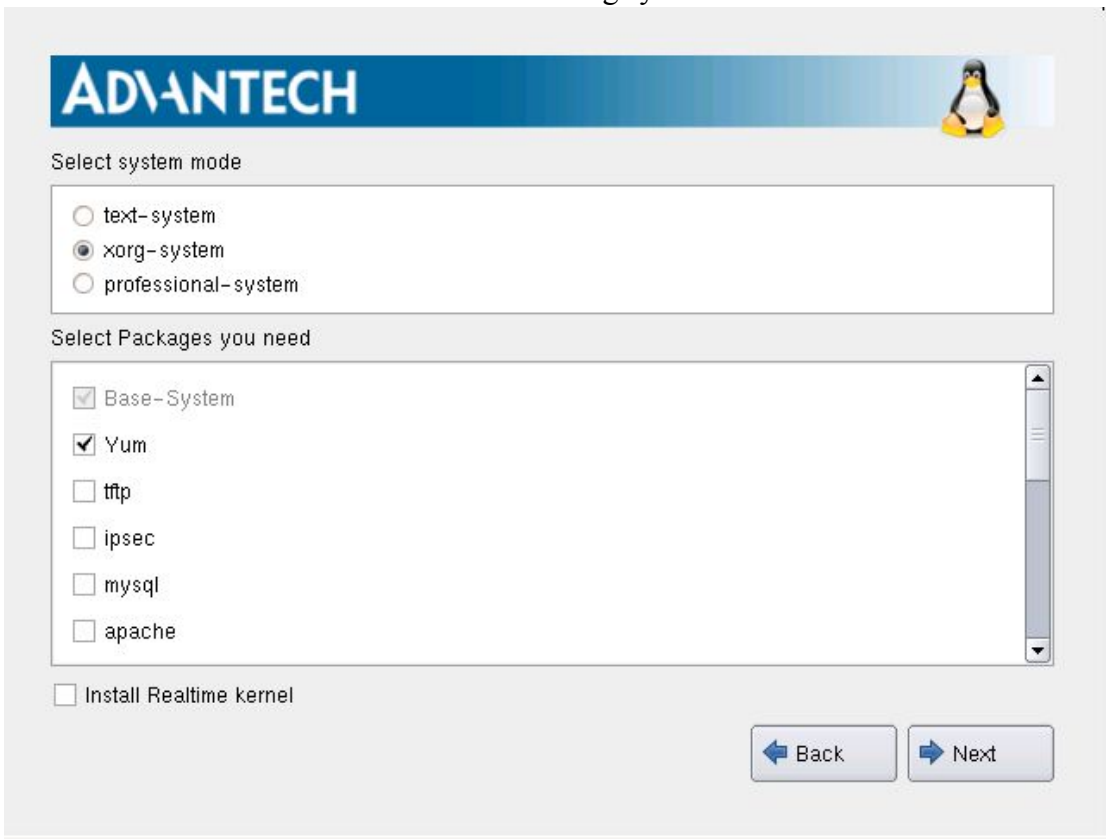
Real time kernel: In this step, the user can also choose to install real time kernel to improve system real-time if they need.

When choosing Text-System type, the user can select other option packages in list to extend the OS function on text system. It mainly contains packages as below:

- ✓ tftp: includes tftp server.
- ✓ mysql : mysql database; includes client and server.
- ✓ apache: a kind of http servers
- ✓ php:a tool to develop web

- ✓ ipsec : includes IP security tools.
- ✓ yum: include yum tools.
- ✓ qt-fb: QT runtime environment based on frame buffer.

When the Xorg-System type is chosen, the user can select other option packages in the list below to extend the OS function of Xorg system.



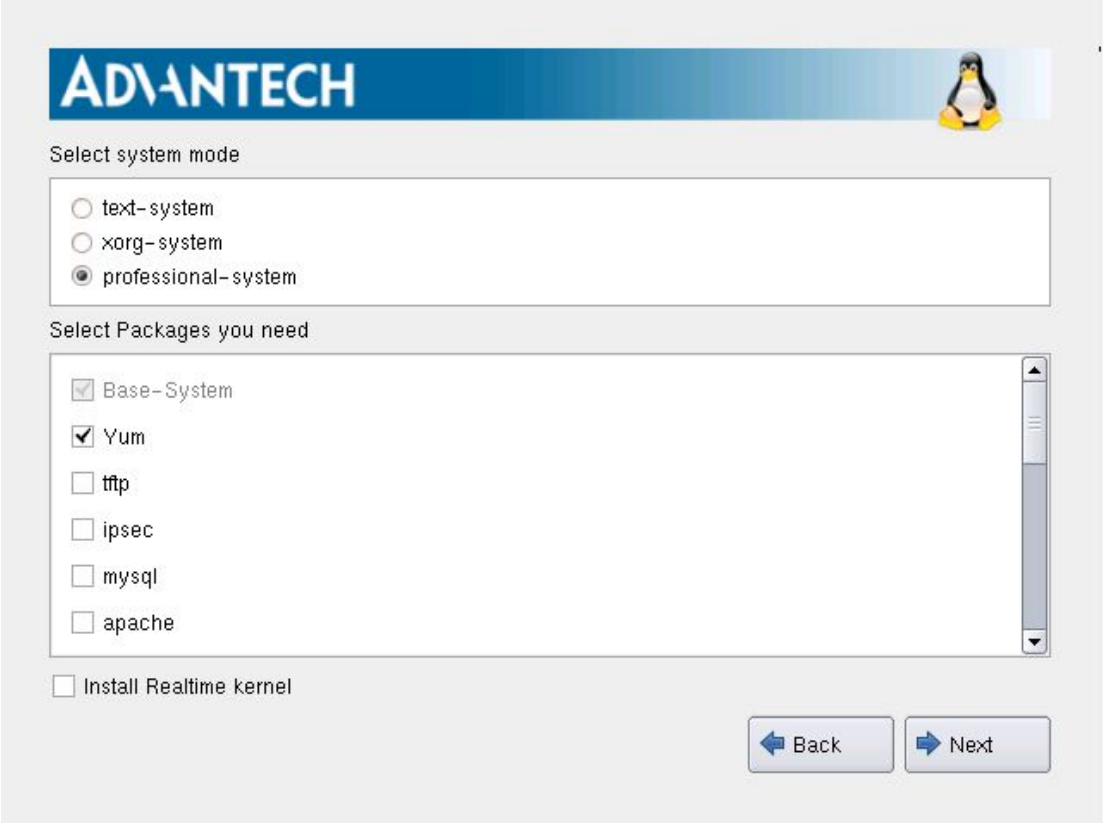
Picture 3-13 Installation mode select interface

Besides the 5 packages in text system type， the Xorg append additional optional packages, including muti-language support, VNC server, xorg-X11-server and Firefox

- ✓ Japanese-supported: supports Japanese.
- ✓ Korean-supported: supports Korean.
- ✓ Russian-supported: supports Russian
- ✓ Simplified-Chinese-supported: supports simplified Chinese.
- ✓ Traditional-Chinese-supported: supports traditional Chinese.
- ✓ vnc : VNC server provide remote desktop service.
- ✓ Qt-x11: qt based framebuffer.
- ✓ xfce-desktop: A lightweight desktop environment.
- ✓ xorg-x11-server: A basic X window system.

Note:

If user chooses one of the languages, it will be the default language used by Xwindow.



Picture 3-14 Installation mode selection interface

In Profession-System mode, additional optional packages are the same as that in Xorg system. but it furthermore installs the gcc and basic development header files such as kernel header file, glibc headers, qtcreator and so on, After the installation type and tools are selected, click <Next> to continue the installation.

3.3.9. Step 9: Package installation

Picture 3-15 Installation process interface

The time required by the installation process is relative to hardware performance. It can be several minutes.

3.3.10. Step 10: Congratulation

The installation completion picture is shown below.

Picture 3-16 Installation complete interface

After the installation, please remove CD from CDROM and press “reboot” to restart the system. The system installation is finished, please enjoy it!

3.4. Install from USB disk

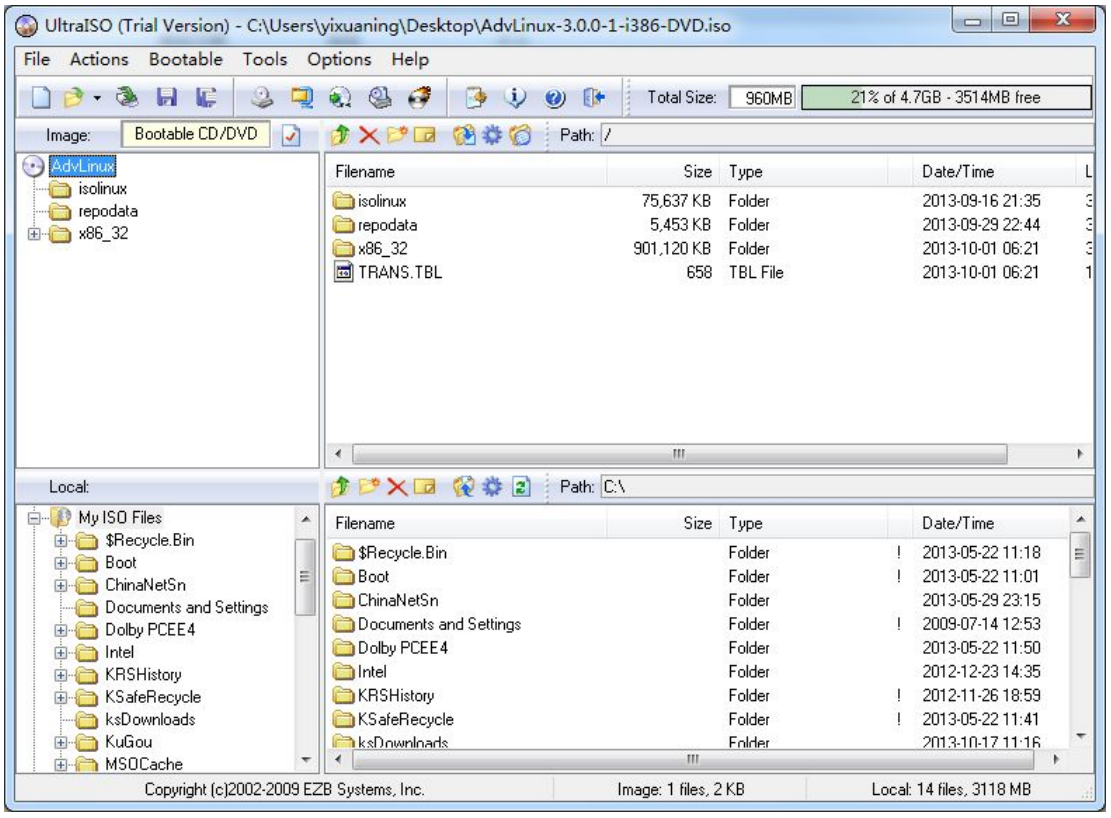
AdvLinux3.0 supports installing AdvLinux from USB disk and it doesn’t need to burn the CD or DROM. Here we will give an example on how to install AdvLinux from USB disk. In Windows (windows XP/7 for example), insert the USB disk.

First you should prepare a USB disk whose size is no less than 2G .

Launch UltraISO

Open ISO file

From menu File->Open Select AdvLinux ISO file



Picture 3-17 Open Select AdvLinux ISO File

Burn ISO file to USB disk.

Select “Bootable->WriteDiskImage” from the menu. The write method depends on your device BIOS, may be USB-ZIP, USB-HDD or USB-HDD+, and then press “Write” to burn ISO to USB disk.

Picture 3-18 Burn ISO to USB disk

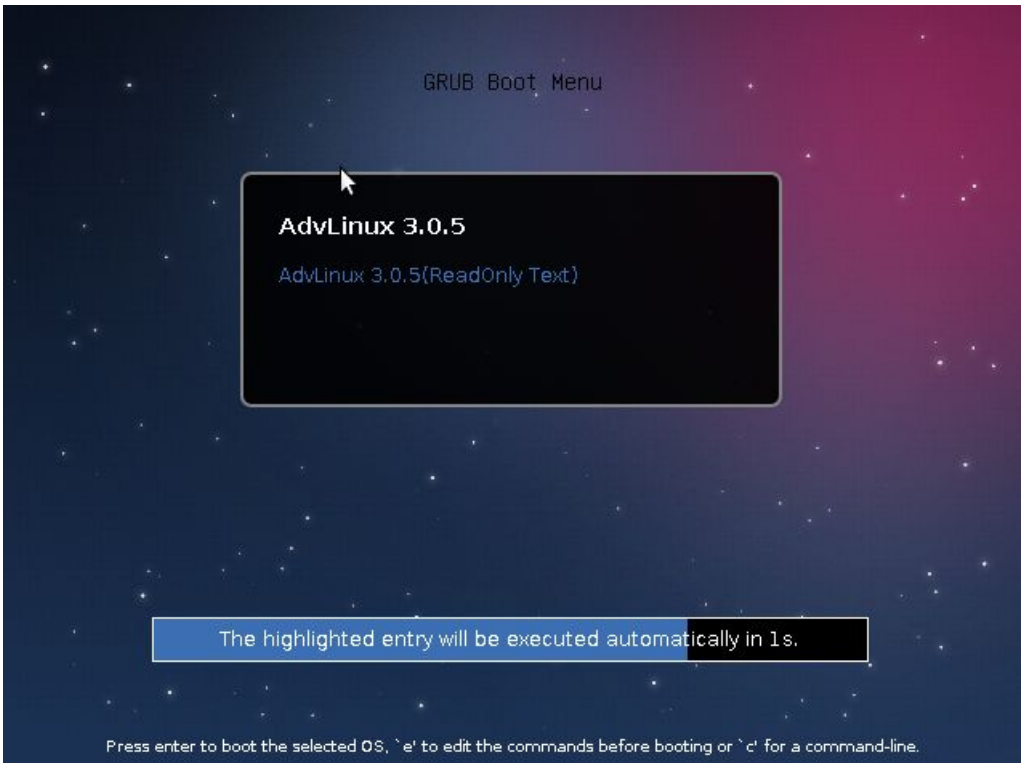
Set device boot from USB disk, the installation picture will show. The installation steps are the same as CDROM steps.

Note: In some devices, you should also set “Hard Disk Boot Priority” to USB disk in BIOS in order to boot from USB disk.

4. Read only root file system

AdvLinux3.0 can mount root file system with read-only or read-write mode according to the parameter setting in grub configuration file -- /boot/grub2/grub.cfg. Here are the steps you can use to select

Read only system



Picture 4-1 Grub select menu

When grub is loading during system is booting, press the direction key and an interface providing two boot choices for the user to select. The "AdvLinux3.0.5" mode is set as the default. In order to enhance its stability, the user had better select the read-only mode after finishing development.

The read & write mode is the default startup option. In order to change the default startup option to the read-only mode, follow the command below:
#vi /boot/grub2/grub.cfg
Then change "set default=0" to "set default=1".

5. AdvLinux X-Windows Introduction

5.1. X-Windows overview

Advantech Linux3.0 supports X-Windows if user chooses Xorg-system or Profession-system before installation starts and then the system will startup X-window by default. The Advantech Linux's X-window system is based on Xorg and xfce.

- Xorg

It is a cost-free standard X server software with high configurability. All graphic cards on the market have certain configuration for Xorg.

For further details, refer to http://www.x.org/

- Xfce4

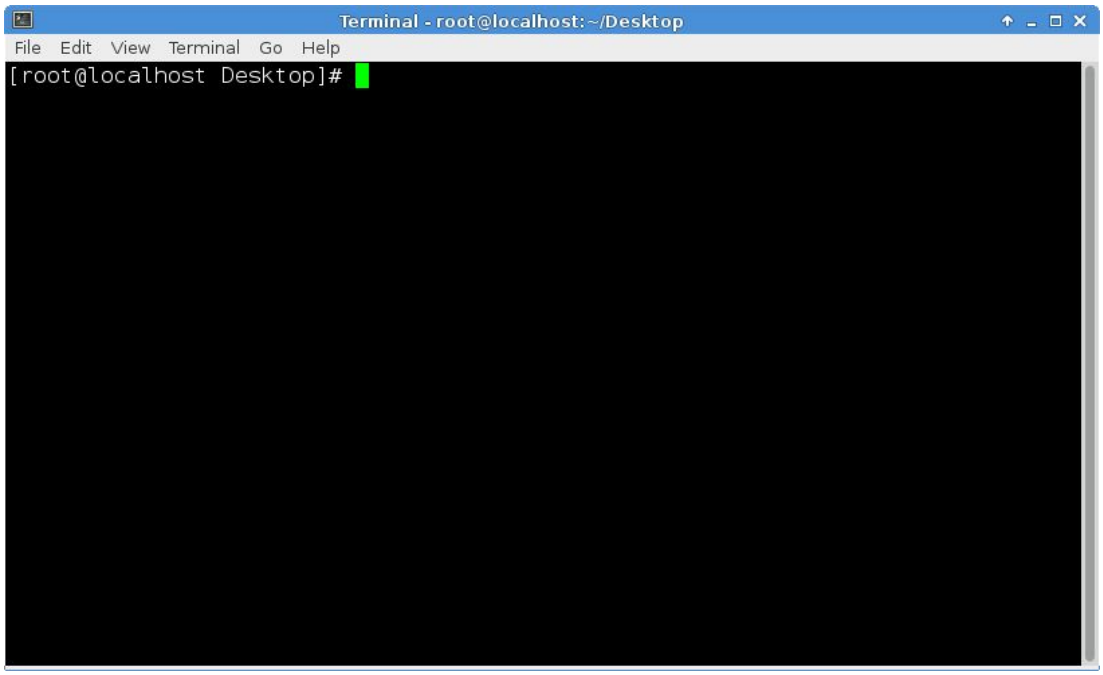
Xfce is a lightweight desktop environment for unix-like operating systems. It aims to be fast and lightweight, while still being visually appealing and user friendly. The system uses the version xfce4-4.10.0.
Official website:http://www.xfce.org/
For further details, refer to http://docs.xfce.org/

5.2. X-window tools

AdvLinux3.0 provides many tools based on X-Windows, here we mainly introduce some important tools that the user may use frequently.

5.2.1. X Terminal

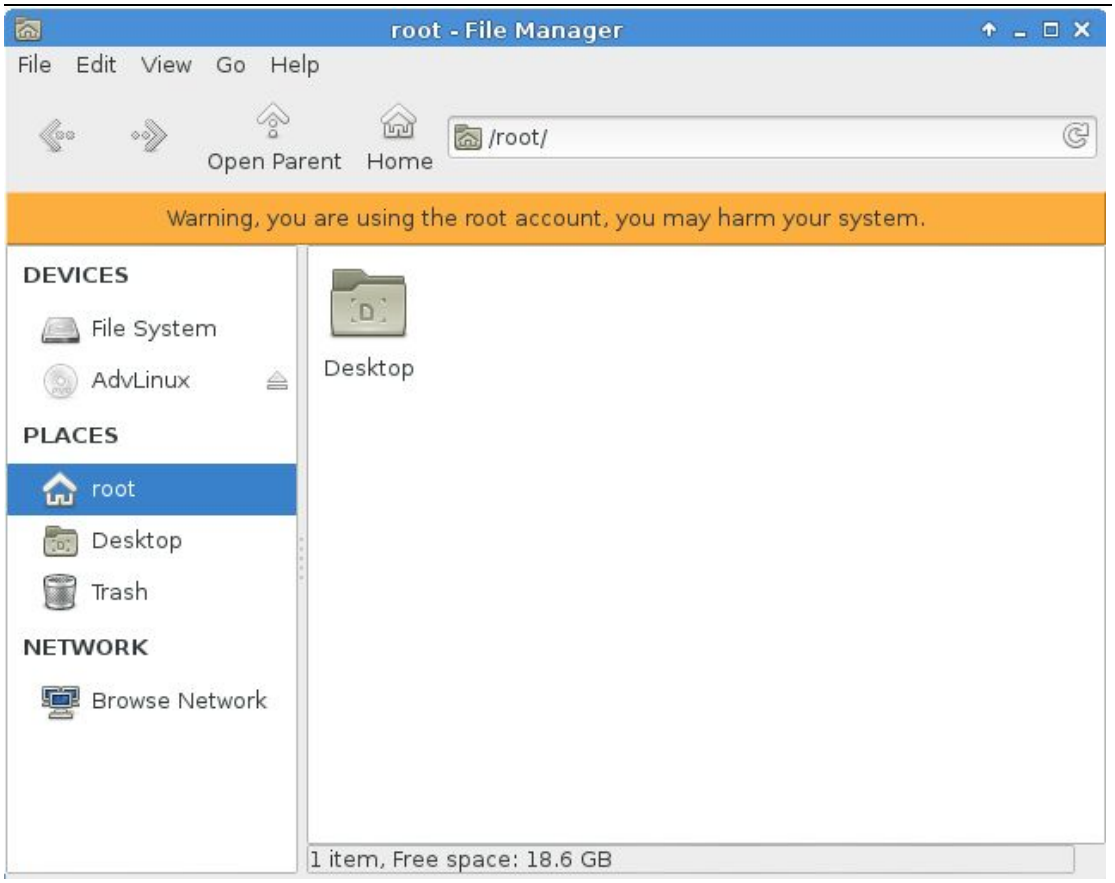
It is a terminal tool for X environment. It is applied to several Released versions of Linux.



Picture 5-1 X Terminal

5.2.2. Thunar

It provides folder management functions similar to windows and can be used to configure desktop icons. It follows the GPL.

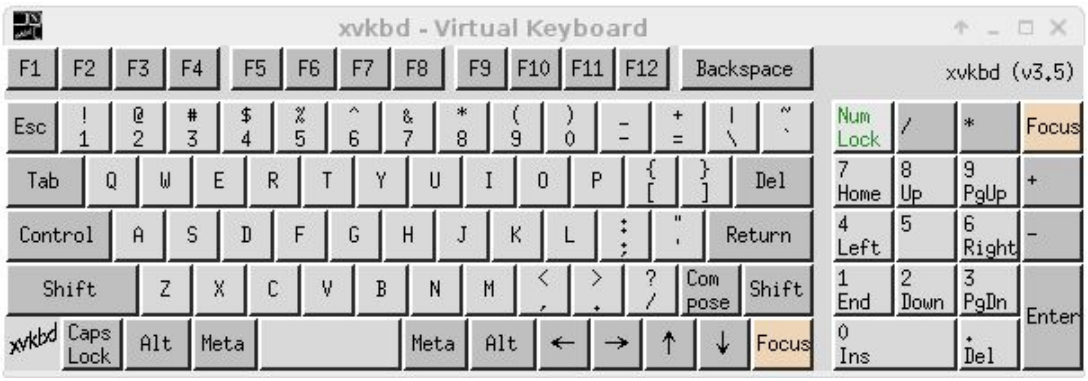


Picture 5-2 Thunar

The system uses the version Thunar-1.6.1. Thunar is a fast and easy to use file manager for xfce desktop environment.

Official site: http://thunar.xfce.org/

5.2.3. XVKBD



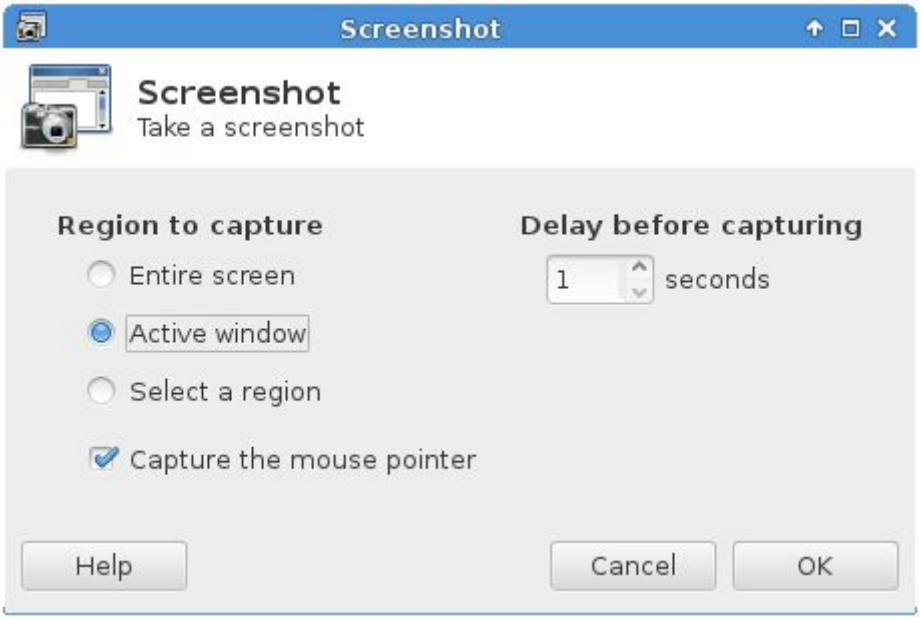
Picture 5-3 xvkbd

Xvkbd is a virtual (graphical) keyboard program for X Window System which provides facility to enter characters onto other applications by clicking on a keyboard displayed on the screen. This may be used for systems without a hardware keyboard such as kiosk terminals or handheld devices.

If the user wants to configure the xvkbd, please click Virtual Keyboard.

5.2.4. Screenshot

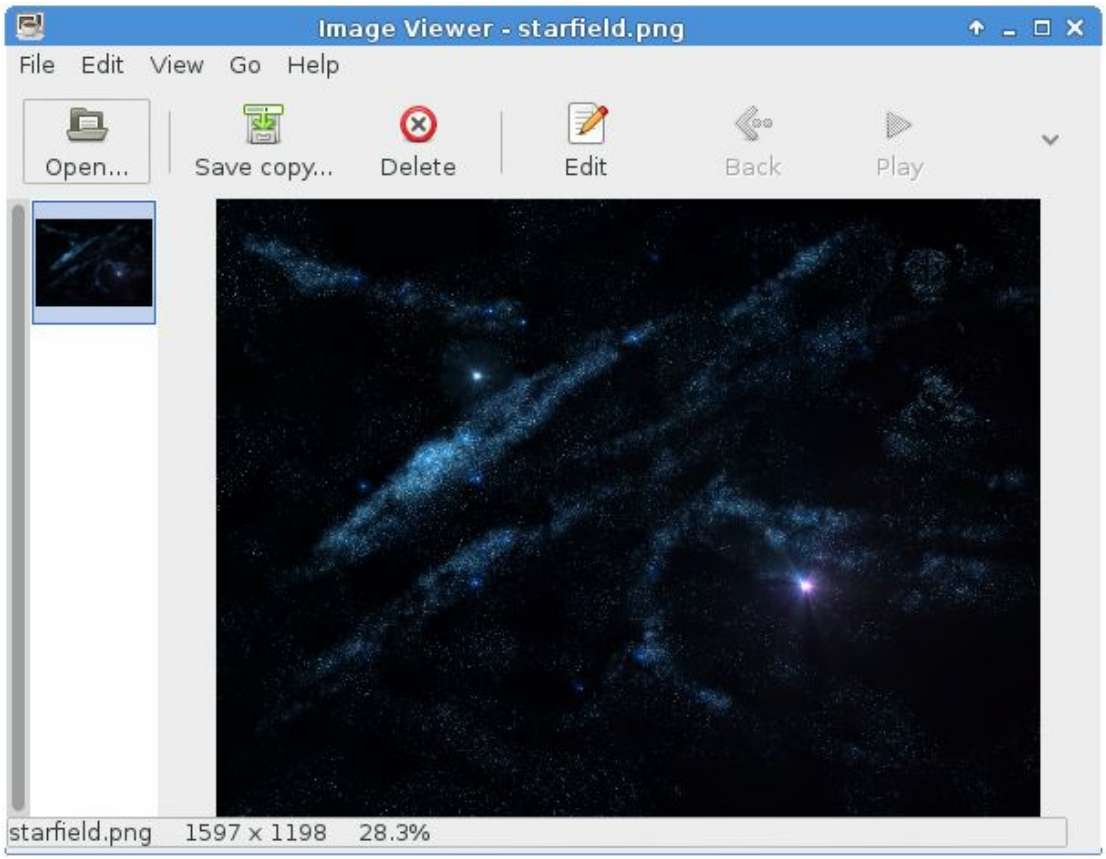
Screenshot is a plug-in for the Xfce panel which can take desktop or selected window screenshots.



Picture 5-4 Screenshots

5.2.5. Image viewer

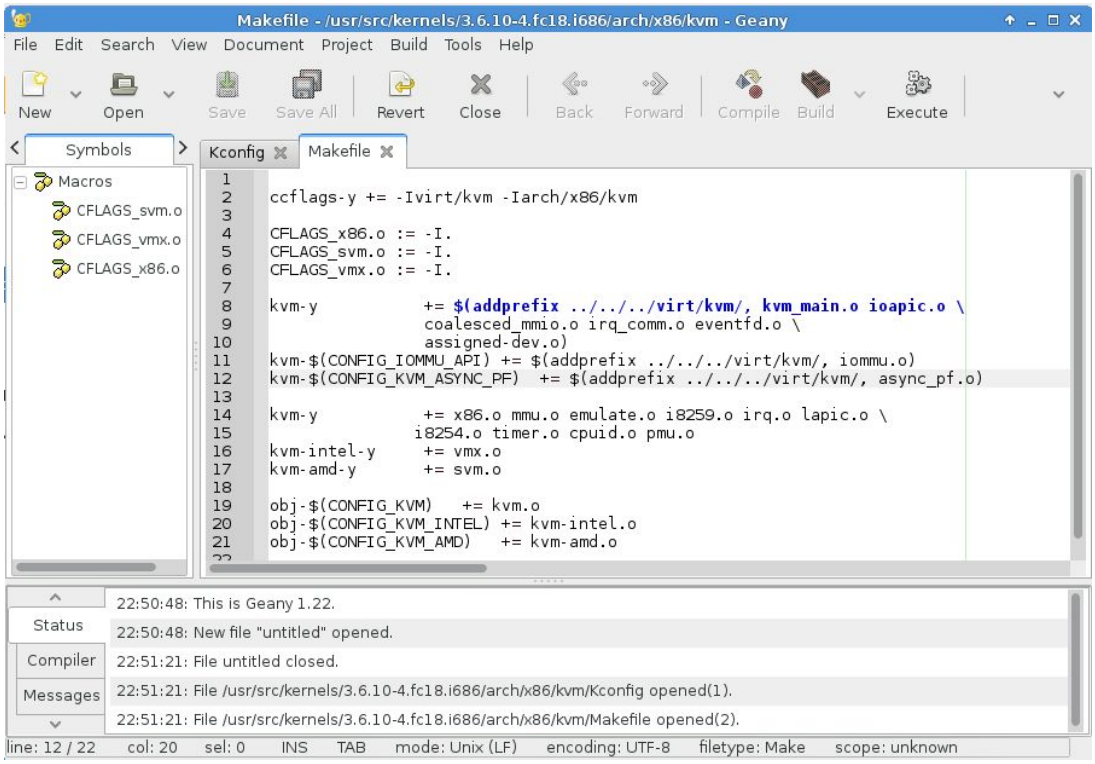
Ristretto is a fast and lightweight picture-viewer for the Xfce desktop environment. Ristretto is different from other image viewers. You can navigate between images, view image thumbnails, run a slideshow, flip or rotate images. Ristretto does not do any basic image editing. But it is aware of the image editing applications and gives you options to open the images for editing in apps like GIMP.



Picture 5-5 Lightweight picture-viewer Ristretto

5.2.6. Development IDE: Geany

Geany is a text editor using the GTK2 toolkit with basic features of an integrated development environment. It was developed to provide a small and fast IDE, which has only a few dependencies from other packages. It supports many file types and has some nice features. For more details, see http://www.geany.org/



Picture 5-6 Geany

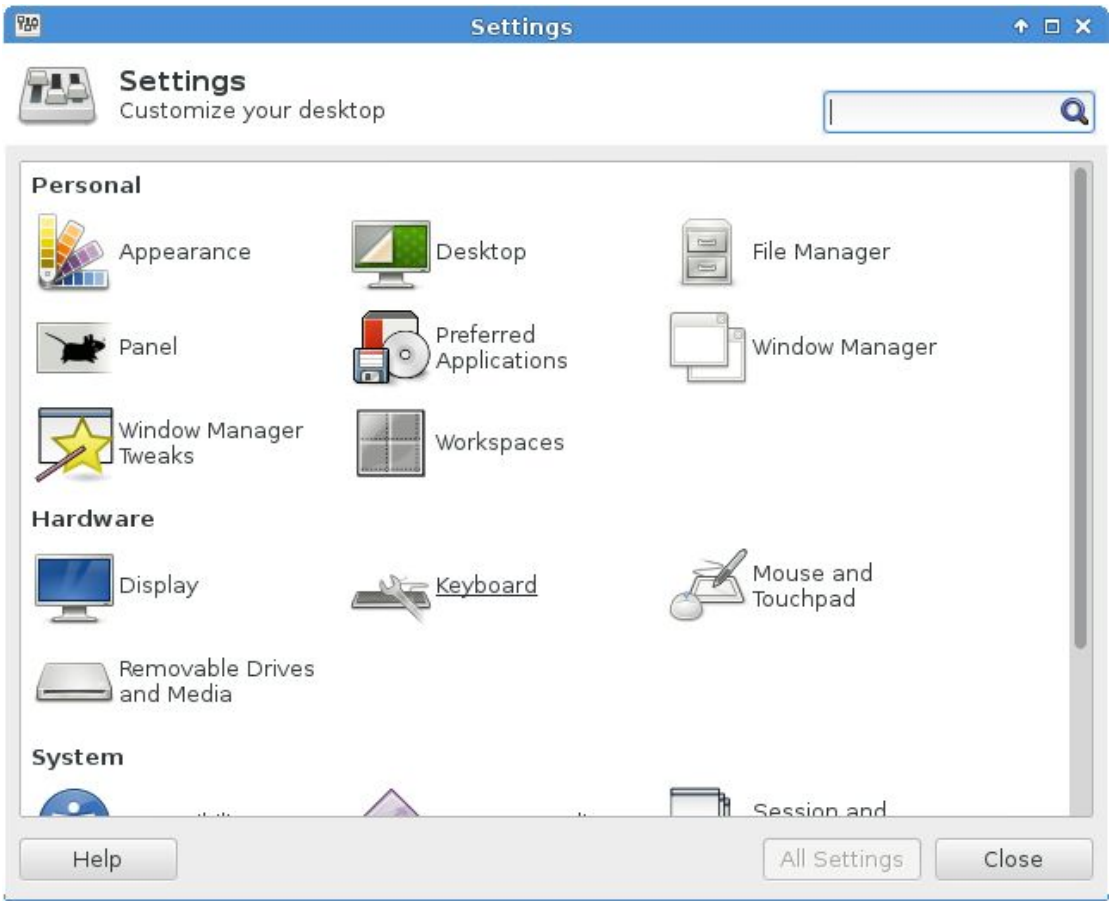
5.2.7. About AdvLinux

About AdvLinux is a tool displaying device name, kernel, glibc version and so on.

Picture 5-7 About AdvLinux

5.3. X-Windows Configuration

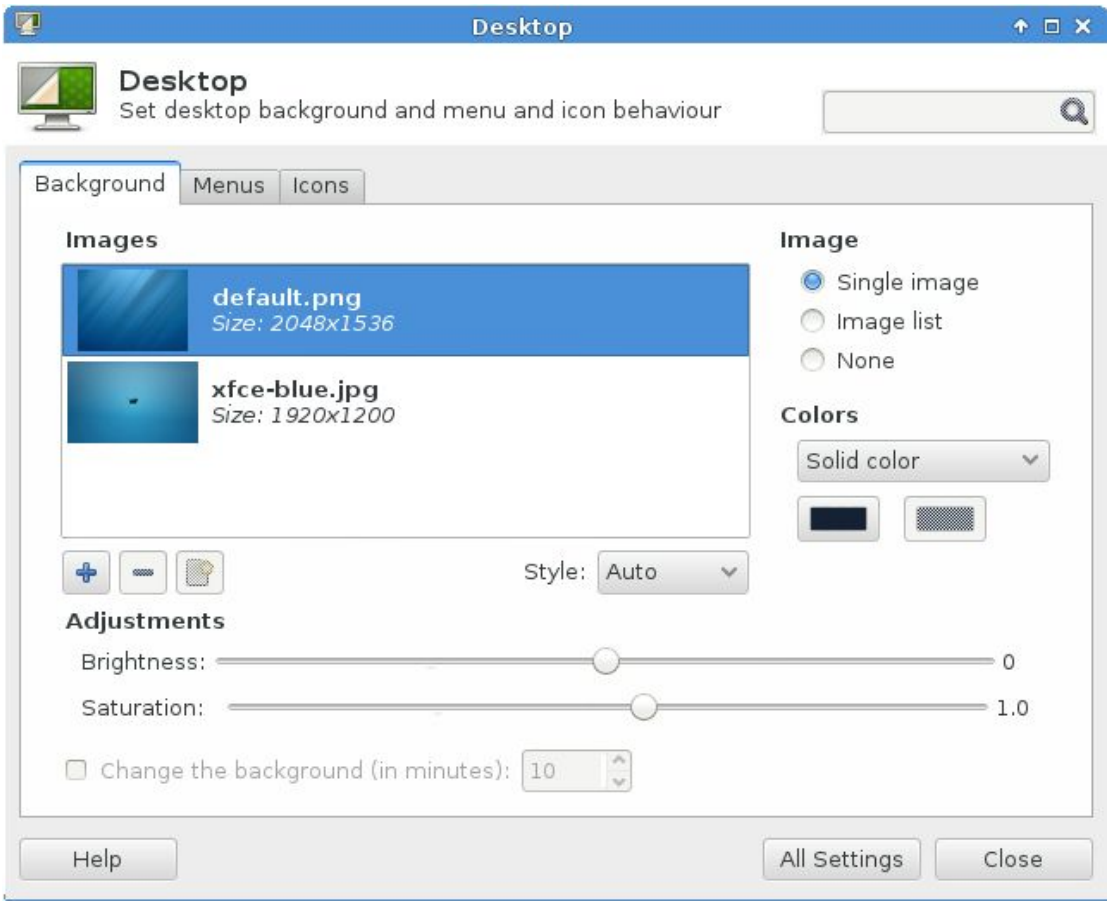
AdvLinux3.0 provides many helpful tools for user configuration, most of them can open from the XFCE setting manager. In these sections, we will introduce some of them which is helpful to user to configuration system.



Picture 5-8 XFCE setting manage

5.3.1. Desktop configuration

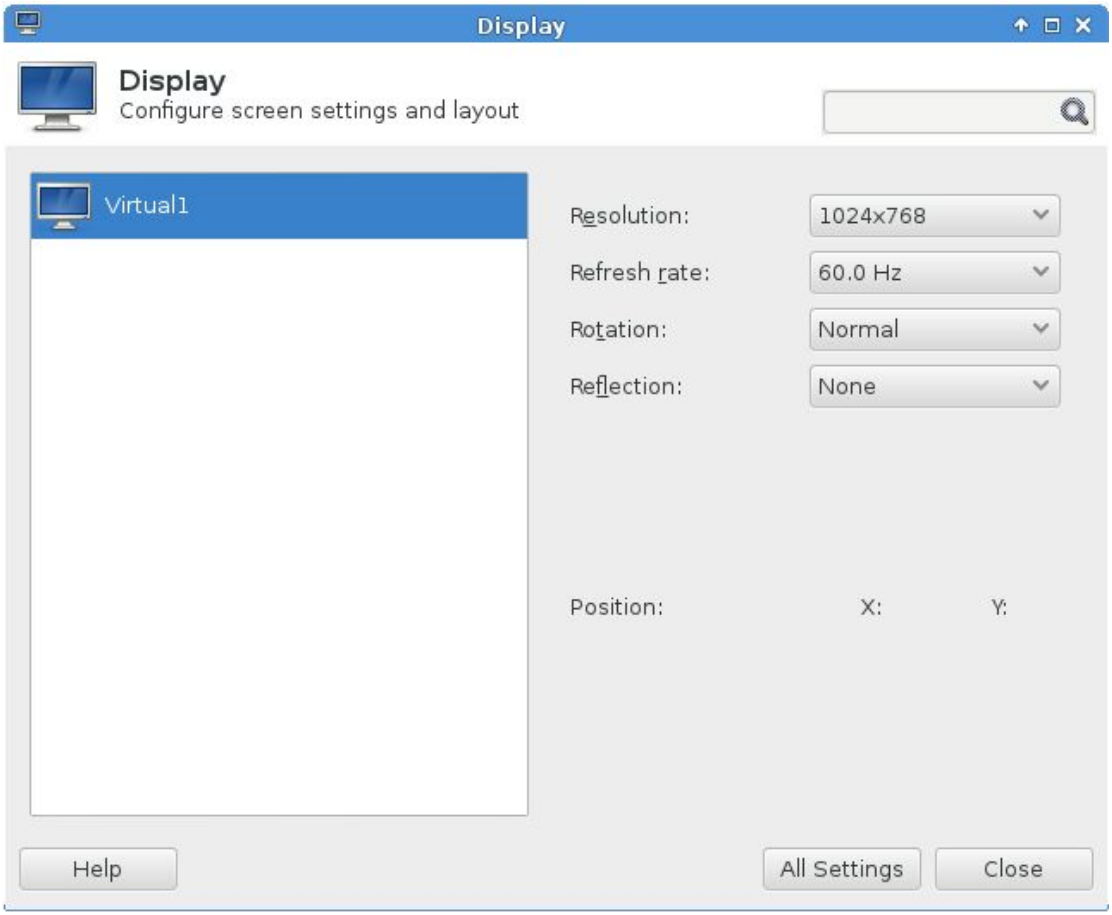
This allows XFCE to manage desktop, for example, change desktop background color and set desktop background image, adjust brightness, change desktop icons size and so on.



Picture 5-9 XFCE desktop setting

5.3.2. Resolution configuration

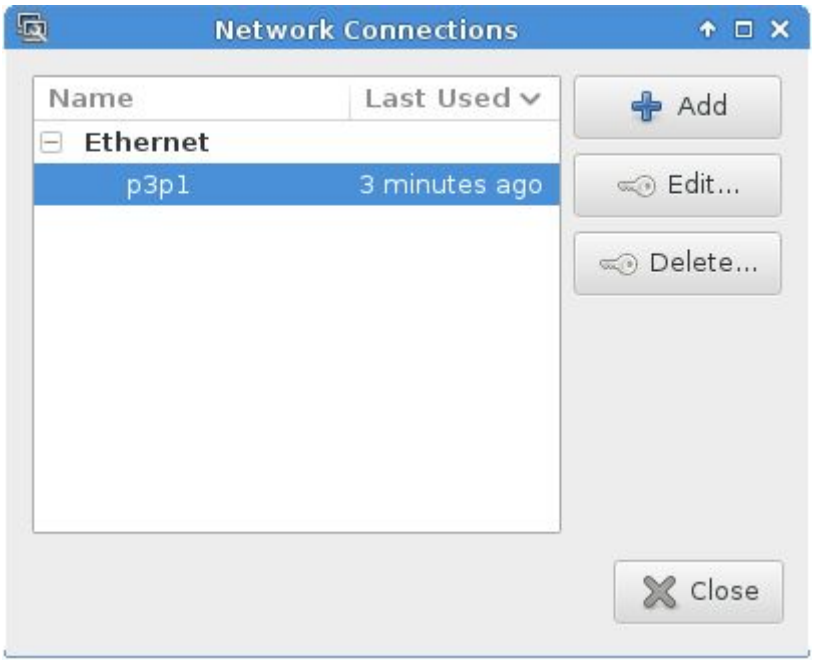
Select Display item from list to change the Xorg resolution. (Except extended screen).



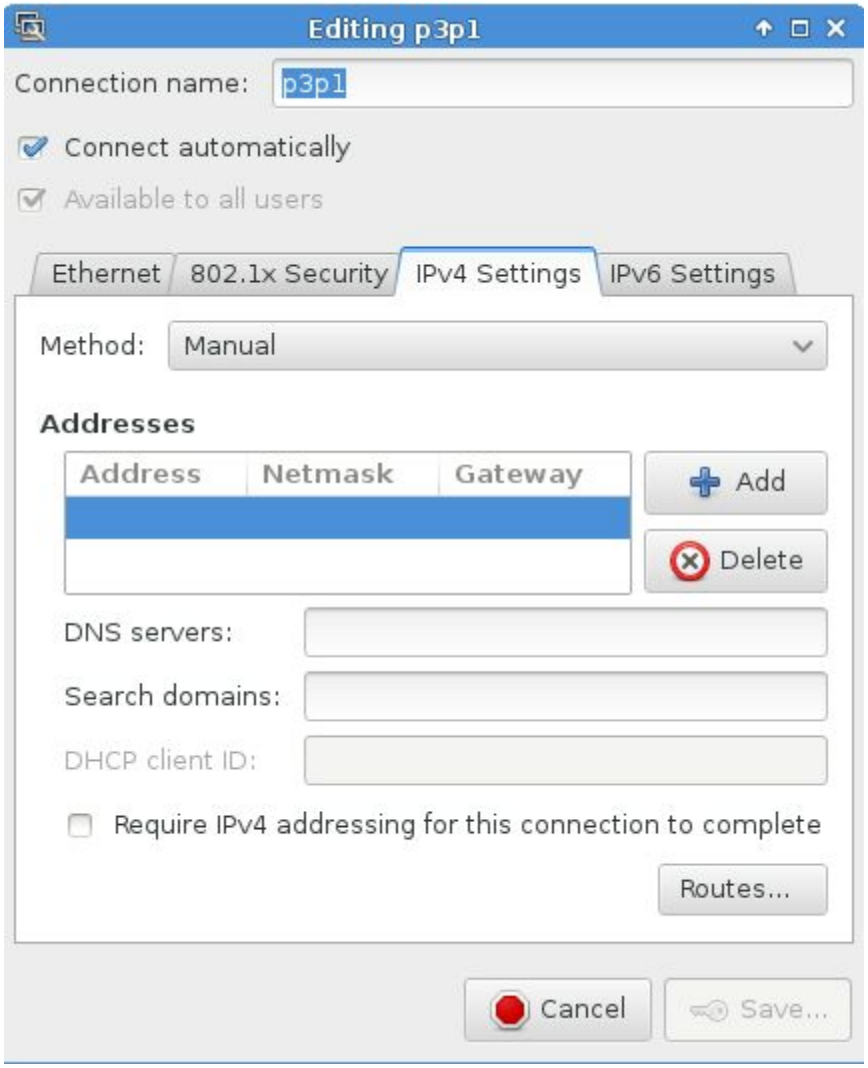
Picture 5-10 Resolution Setting

5.3.3. IP configuration

AdvLinux3.0 gets IP with the way of DHCP default, if you want to get IP by static, you can use “Network Connection”. If you set static IP, you must restart the service of NetworkManager. Please run: systemctl restart NetworkManager.service

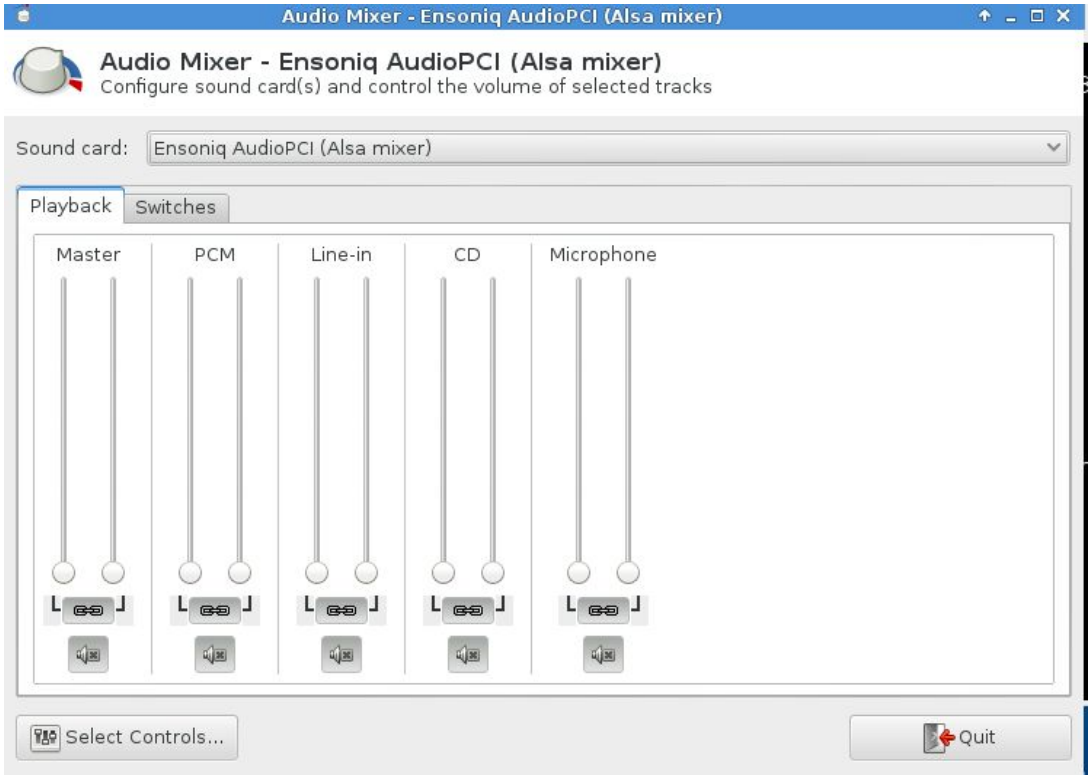


Picture 5-11 Network Connections



Picture 5-12 Network IP Setting

5.3.4. Sound card configuration

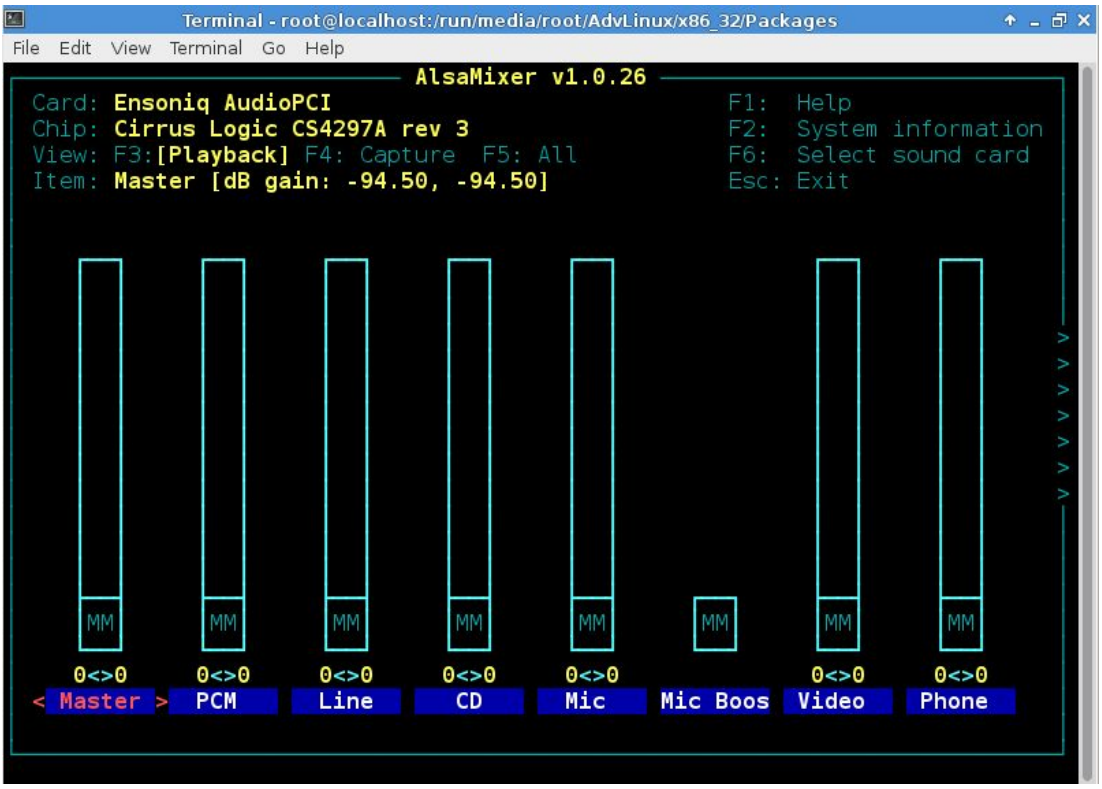


Picture 5-13 Audio Setting

If user install the text mode, please run

#alsamixer

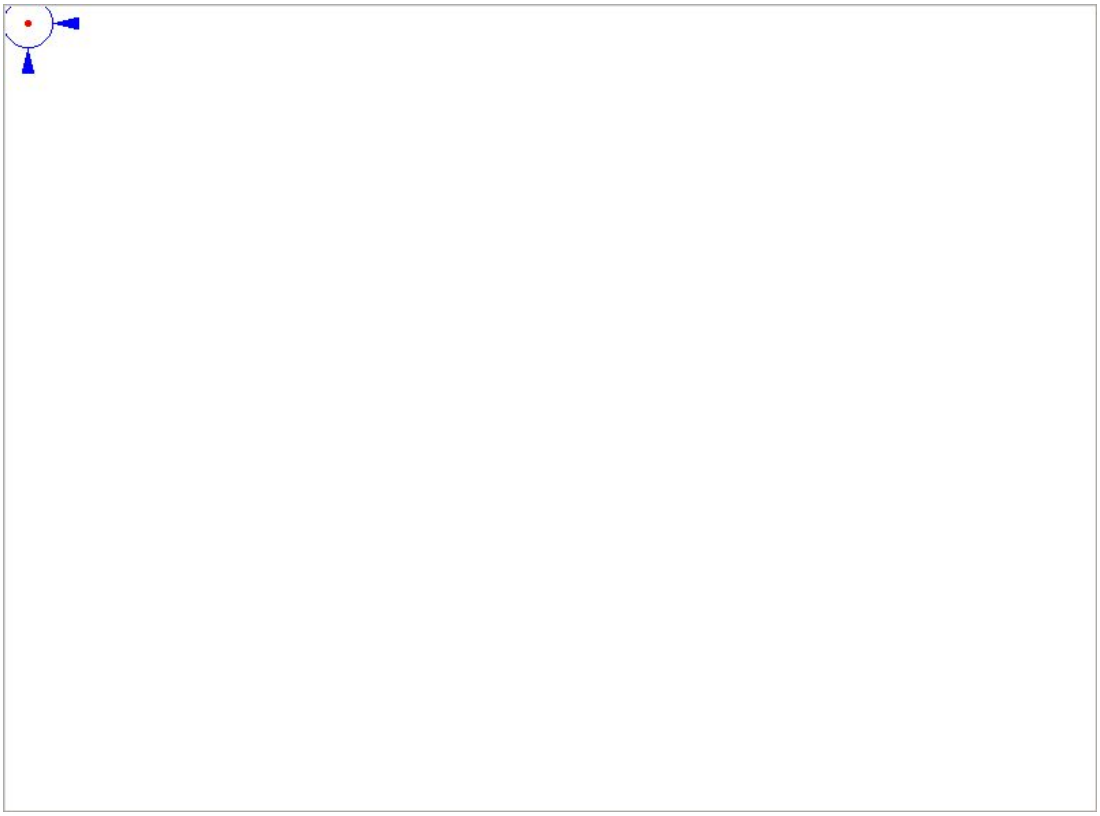
The Sound configuration tools will be shown as below:



Picture 5-14 Audio Setting

5.3.5. TPC touch screen calibration

Advantech Linux3.0 supports Advantech TPC products, and it provides touch screen driver, configuration files and calibration tools for TPC products.
When the system reboots after the installation has been completed.
User should calibrate the touch screen first.
#gCal 16
The following picture will show:

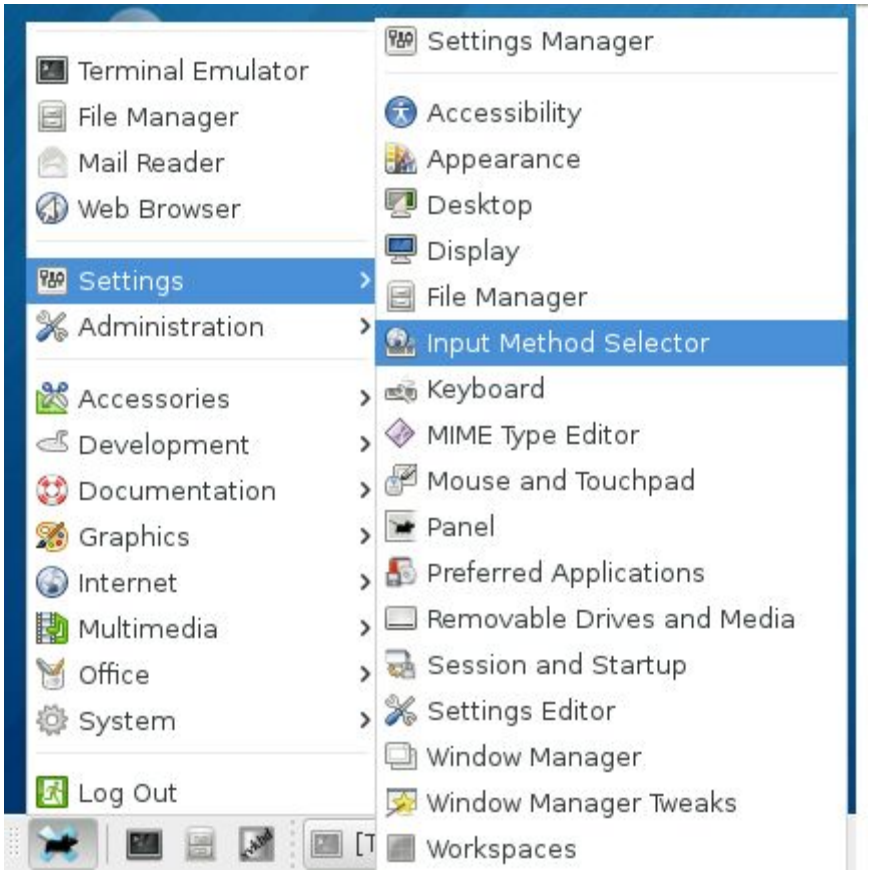


Picture 5-15 Calibration Picture

5.3.6. Input Method configuration

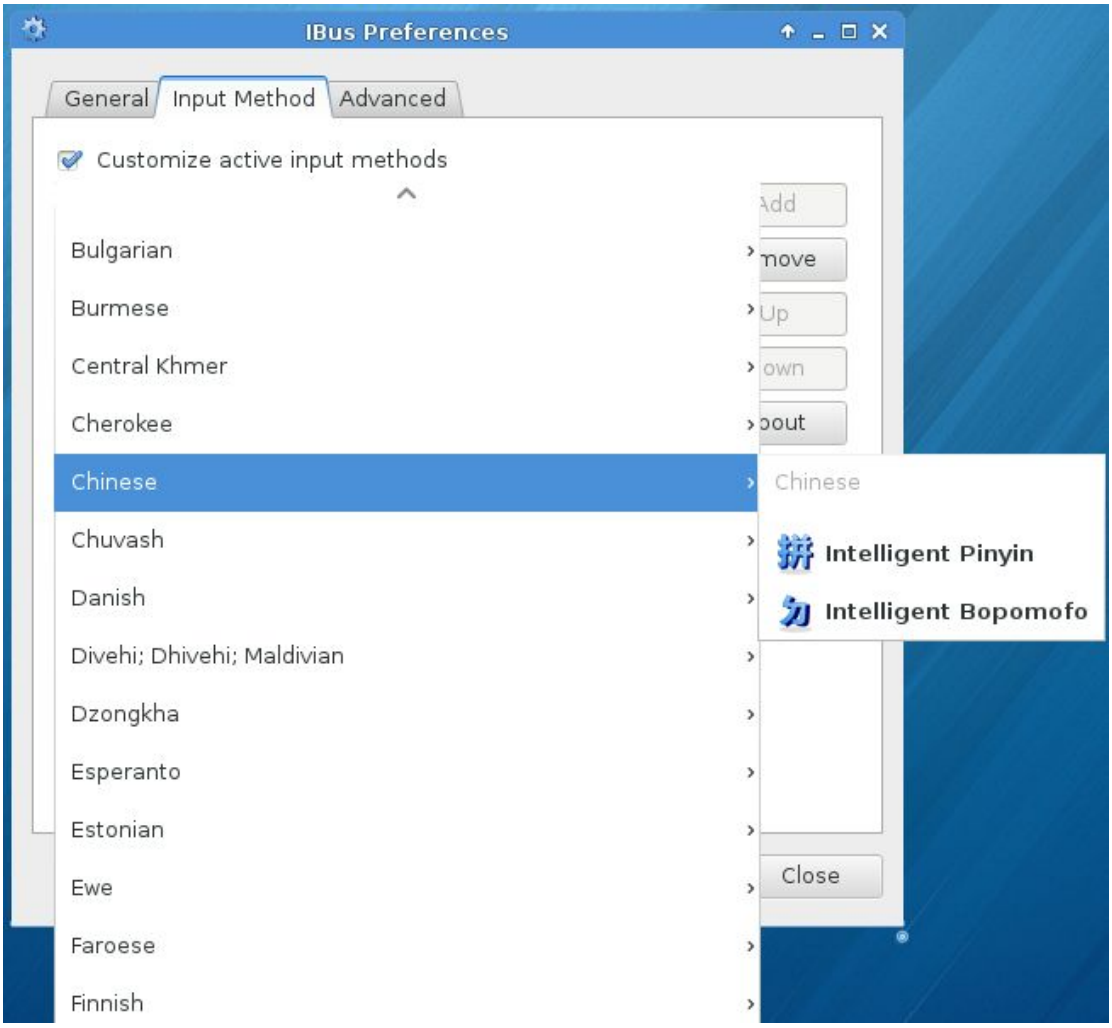
Please install the language packs that you want before install input method

a) Open Input Method Selector.



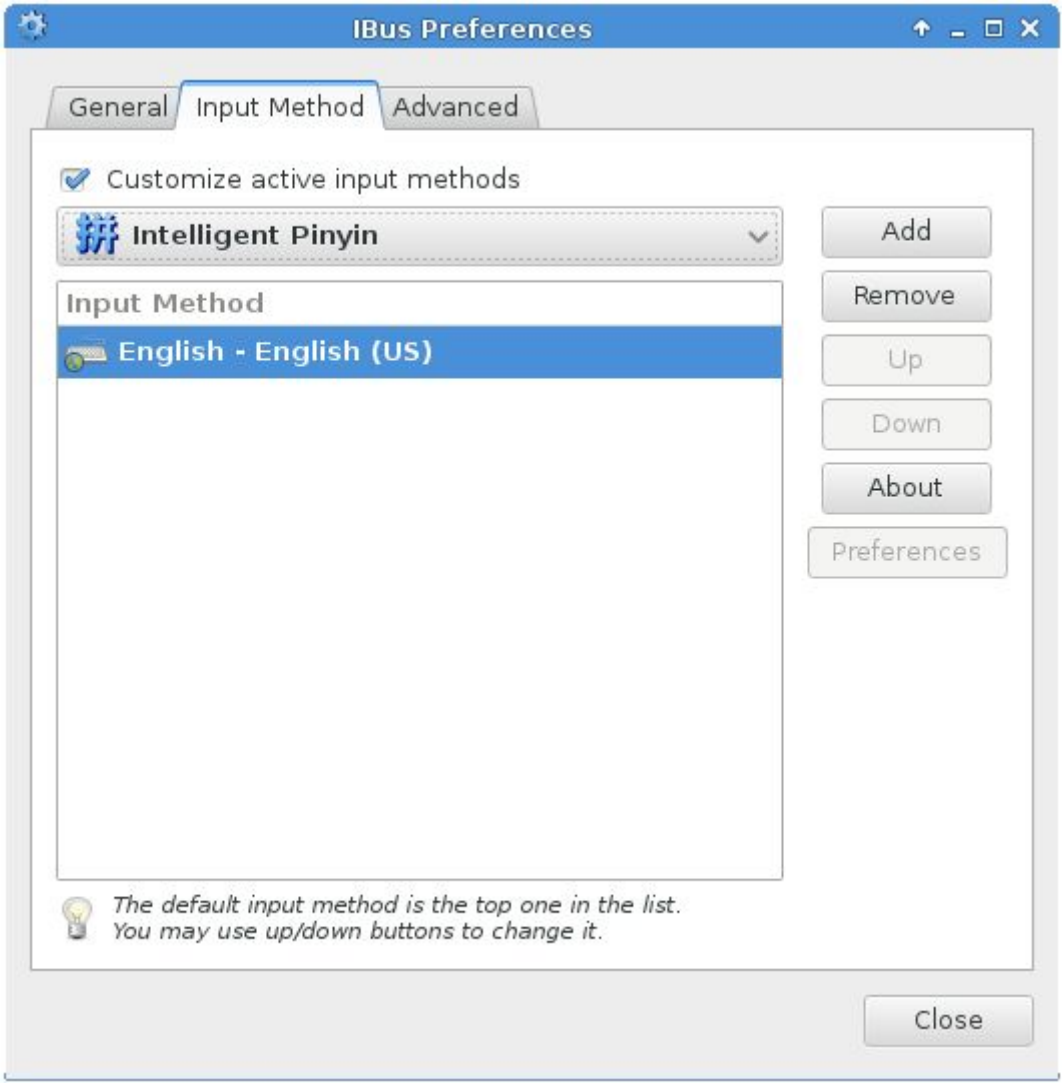
Picture 5-16 Open Input Method

b) Choose Input Method and select “Customize active input method”, then choose the input method which you need, like this:



Picture 5-17 Customize Input Method

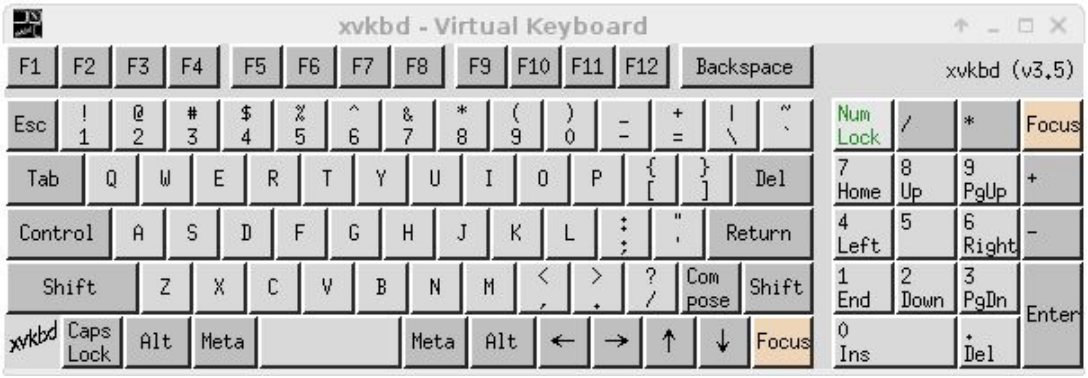
c) Click "Add" to install the input method.



Picture 5-18 Customize Input Method

5.3.7. Virtual Keyboard

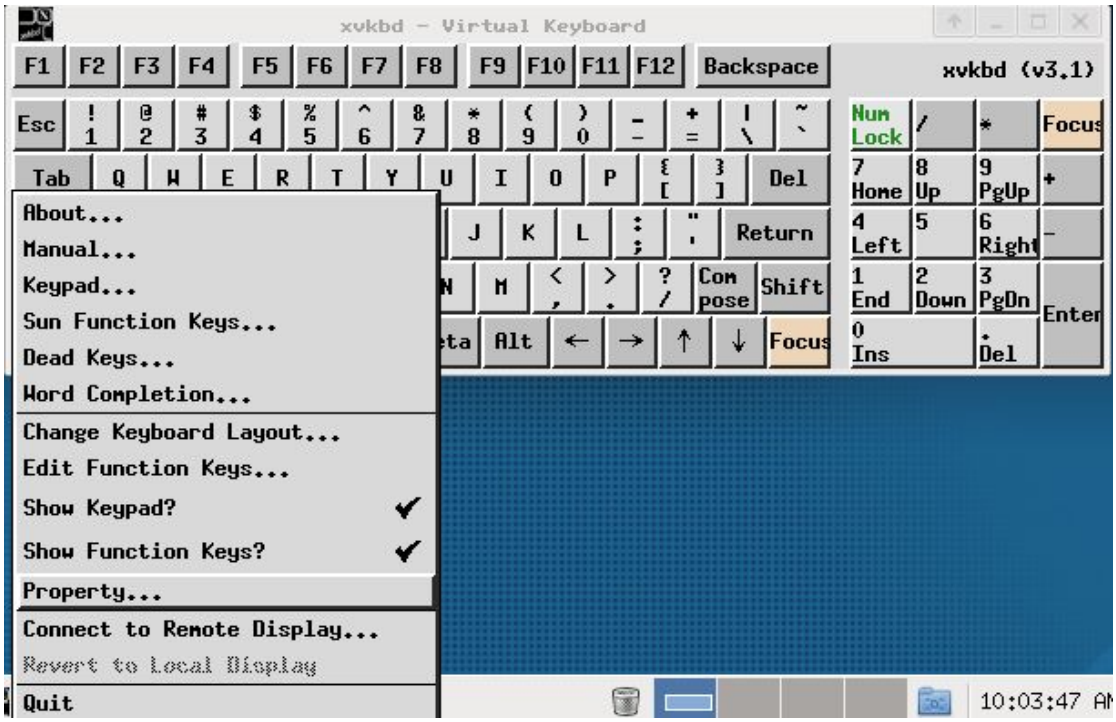
The virtual keyboard will be installed in AdvLinux3.0.



Picture 5-19 Virtual keyboard

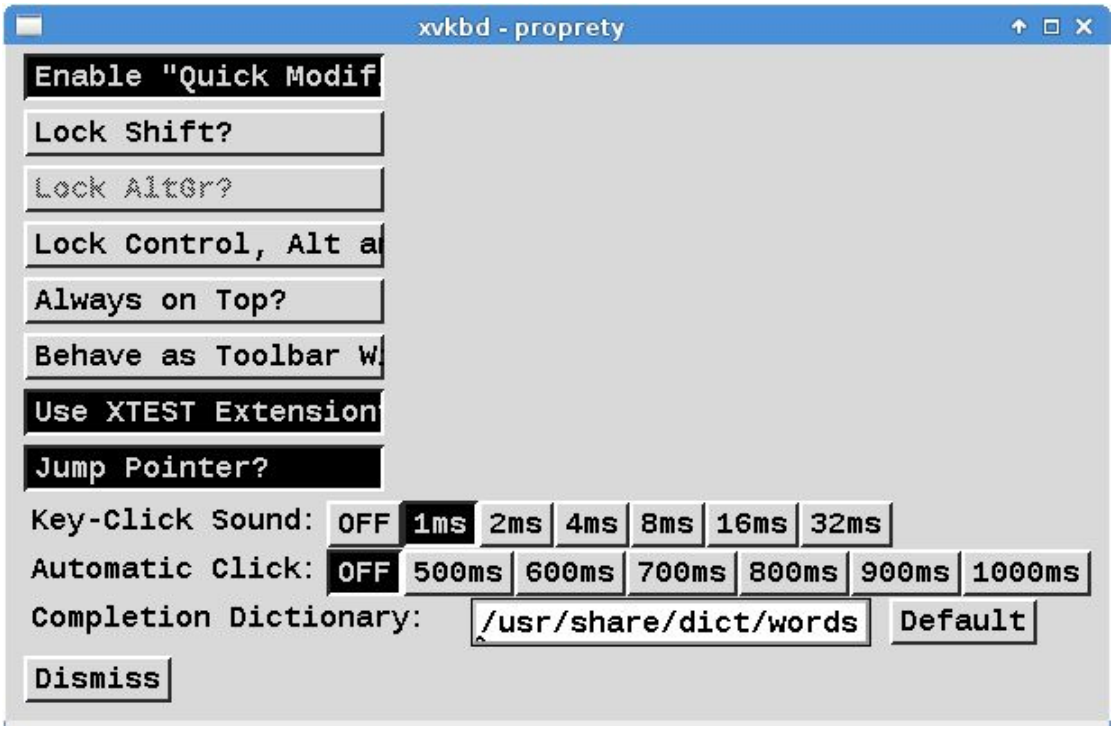
To configure the virtual keyboard, move the mouse to "xvkbd" (In the lower left

corner of xvkbd panel) and press left button, then the menu will be shown as below:



Picture 5-20 Virtual keyboard menu

For example, to open Property of the virtual keyboard, move the mouse to “property” and release the left button, the property page will be shown as below:



Picture 5-21 Virtual Keyboard Configuration

For example, if user does not want the Automatic Click, click the OFF button to close the property.

6. Console mode configuration

6.1. Date and time configuration

Use the date command to modify the date
Usage: date [OPTION]... [MMDDhhmm[[CC]YY][.ss]] [+FORMAT]
For example:
Fri Oct 18 09:11:05 CST 2013
#date 101809112013.05

6.2. System Language configuration

At Step8 of installation, user can select the support languages. English is always supported. Besides English, there are five optional languages: Japanese, Korean, Russian, simplified-Chinese and Traditional-Chinese. User can choose one or more of them. If user chooses one of them, it will be the default language used by Xwindow. User can modify language configuration file to set the default language. The configuration files are /etc/locale.conf:

1、If you want to set Simplified-Chinese as default, set as below
LANG=”zh_CN.UTF-8”
2、If you want to set Traditional-Chinese as default, set as below
LANG=”zh_TW.UTF-8”
3、If you want to set Japanese as default, set as below
LANG="ja_JP.UTF-8”
4、If you want to set Korean as default, set as below
LANG= “ko_KR.UTF-8 “
5、If you want to set Russian as default, set as below
LANG=”ru_RU.UTF-8”
After this, the user should re-login the system.

6.3. IP configuration

By default, device acquires the IP address dynamically by dhcp.
If user wants to set the static IP address, they should modify the configuration file manually. For example, if you want to configure p1p1 to use the IP address 172.21.73.30, please edit the file accessed by /etc/sysconfig/network-scripts/ifcfg-p1p1 as shown below:

```
DEVICE=p1p1
HWADDR=${Your HWADDR}
ONBOOT=yes
BOOTPROTO=static
```

IPADDR=172.21.73.30
NETMASK=255.255.255.0
GATEWAY=172.21.73.253

After the file is edited and saved, use systemctl restart NetworkManager.service again to enable the network card.
If get IP address dynamically, edit the file /etc/sysconfig/network-scripts/ifcfg-p1p1 as follows:

DEVICE=p1p1
HWADDR=${Your HWADDR}
ONBOOT=yes
BOOTPROTO=dhcp

6.4. Systemctl introduction

Systemd is a system and service manager, which uses systemctl to manage services. systemctl combines the functionality of both service and chkconfig.
Activates a service immediately: systemctl start xxx.service
Deactivates a service immediately: systemctl stop xxx.service
Restarts a service: systemctl restart xxx.service
Shows status of a service including whether it is running or not: systemctl status xxx.service
Enables a service to be started on bootup: systemctl enable xxx.service
Disables a service not to start during bootup: systemctl disable xxx.service
Checks whether a service is already enabled or not: systemctl is-enabled xxx.service; echo $?

6.5. Tftp service configuration

To start the tftp service, edit the file accessed by /etc/xinetd.d/tftp. Change “disable=yes” to “disable=no” and save the change. Perform the following command to initiate the tftp sever. #systemctl restart xinetd.service

6.6. Ftp service configuration

Perform the following command at the terminal (shell command line) to initiate the ftp server:
systemctl restart vsftpd.service
Note: You may stop firewall to allow the user login to your machine.

6.7. Ssh service

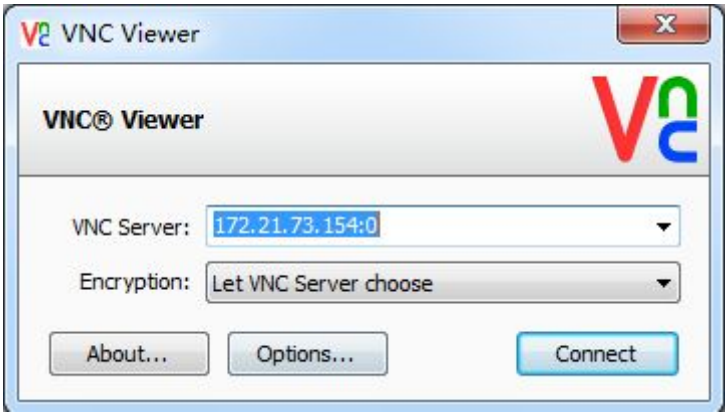
Perform the following command at the terminal (shell command line) to initiate the ssh server:
systemctl restart sshd.service
Note: You may stop firewall to allow the user login to your machine

6.8. Telnet service

To initiate the telnet service, edit the file accessed by /etc/xinetd.d/krb5-telnet. Change "disable =yes" to "disable=no" and save the change. Perform the following command to initiate the telnet service.
systemctl restart xinetd.service
Afterward, access this host through the telnet command of another one. If the testing page is shown normally, then the telnet service of this host has been normally initiated.
Note: You may stop iptables to allow the uses login to your machine

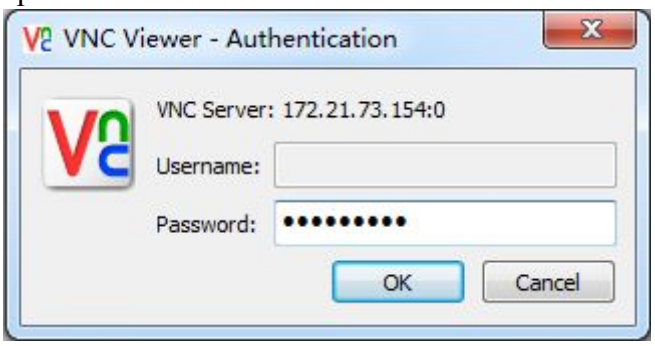
6.9. VNC server configuration

1) Switch to a user you'd like to config VNC:
   #su advantech
2) Set VNC password for vnc user:
   # x11vnc -storepasswd
3) Start VNC Server:
   #x11vnc –rfbauth ~/.vnc/passwd –display :0
4) Use VNC Viewer to connect to your VNC Server:



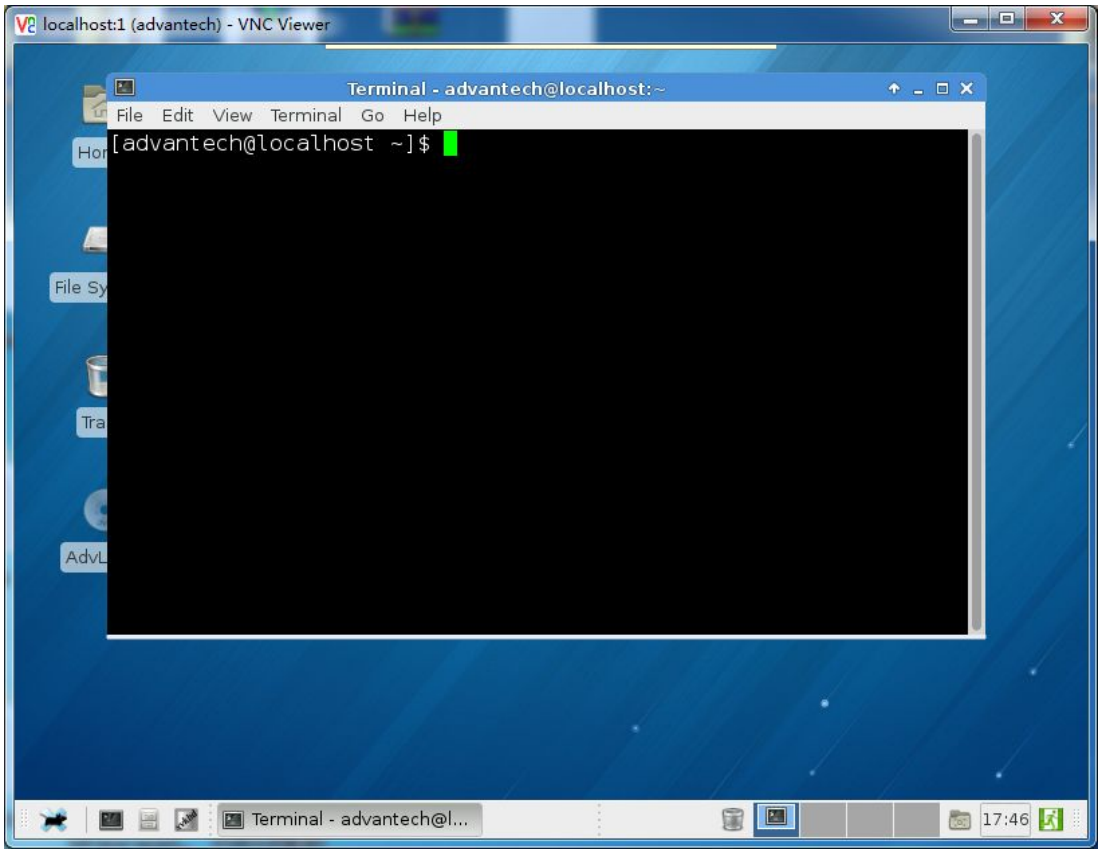
Picture 6-1 VNC Viewer

5) Type your VNC password to connect:



Picture 6-2 VNC Viewer

6) Now you can use AdvLinux3.0 remotely:



Picture 6-3 VNC Viewer

6.10. Linux runlevel configuration

In AdvLinux3.0, systemd uses ‘targets’ instead of run levels. By default, there are two main targets:

multi-user.target analogous to runlevel 3

graphical.target analogous to runlevel 5

Note: Multi-user.target is text mode. Graphical.target is X-Windows mode.

To set a default target, run:

#ln –s /lib/systemd/system/<target name>.target /etc/systemd/system/default.target

#reboot

6.11. User auto login

User can set a user auto login by the following steps:
vi /etc/lightdm/lightdm.conf
Find these lines which is“#autologin-user=” and “#user-session=”, uncomment them and customize to your preference.
Example:

autologin-user=root
user-session=xfce
root user will auto login.

Text mode
#vi /usr/lib/systemd/system/getty@.service
Find the line which is “agetty”,instead it of “agetty --autologin root”.

6.12. MySQL Database configuration

If you select to install MySQL database (including server and client), you can use the following command to start mysql server:
#systemctl start mysqld.service
and use the following command to start mysql client:
#mysql –u username –p passwd
Note: The arguments of mysql command may be different. This depends on the configuration of mysql server. For further details about how to configure mysql server, please refer to the MySQL Reference Manual:
http://dev.mysql.com/doc/.

6.13. Disabled ping response

This is a good way to protect the system. To prevent the system from responding to the ping command, the following command can be used:
#echo 1 > /proc/sys/net/ipv4/icmp_echo_ignore_all
To restore the system to respond the ping command, use the following command:
#echo 0 > /proc/sys/net/ipv4/icmp_echo_ignore_all

6.14. Install Online by yum

6.14.1. About yum

The Yellowdog Updater, Modified (yum) is an open-source command-line package-management utility for Linux operating systems using the RPM Package

Manager.
Usage: yum [options] COMMAND
Example: yum install gcc

6.14.2. Install language package

If user does not select language package at Step8 of installation, user can online install by yum.
Frst of all, users should install Input Method Selector :
#yum install imsettings-xfce imsettings

- Install Simple-Chinese language package:
  #yum groupinstall simplified-Chinese-support
- Install Traditional-Chinese language package:
  #yum groupinstall traditional-Chinese-support
- Install Japanese language package:
  #yum groupinstall Japanese-support
- Install Hangul language package:
  #yum groupinstall Korean-support
- Install Russian language package:
  #yum groupinstall Russian-support

6.15. QT Runtime and Development Environment

6.15.1. QT runtime environment based on frame buffer

The user can choose QT runtime environment by select “qt-fb” based on frame buffer in installing process in Picture 3-14.
Currently we only support touch screen on TPC series devices. Here we only introduce the configuration on TPC devices.
There are two types of touch screen protocol: serial port protocol and USB protocol.
a) Configure tslib
For Serial port protocol
Add following to /root/.bash_profile

```
export QWS_MOUSE_PROTO="Tslib Auto"
export TSLIB_TSDEVICE="/dev/ttySn"
export TSLIB_CONFFILE=/opt/tslib-com/etc/ts.conf
export TSLIB_PLUGINDIR=/opt/tslib-com/lib/ts
export TSLIB_FBDEVICE=/dev/fb0
export LD_LIBRARY_PATH=/opt/tslib-com/lib:/opt/qt/lib
```

Note: You should change “ttySn” to ttyS1, ttyS2…, according to you device.
For USB protocol

Add following to /root/.bash_profile

```
export TSLIB_CONFFILE=/opt/tslib-usb/etc/ts.conf
export TSLIB_PLUGINDIR=/opt/tslib-usb/lib/ts
export TSLIB_FBDEVICE=/dev/fb0
export LD_LIBRARY_PATH=/opt/tslib-usb/lib:/opt/qt/lib
source tslib_setenv >/dev/null
```

The user should logout and login so that the environment variables will take effect.

b) Calibrate touch screen and test

#ts_calibrate

Press the point the screen; you will see the calibration is complete.

#qt-demo –qws

6.15.2. QT Development environment

The user can choose QT Development environment by selecting “QT creator” in installing process in section 3.16.

QT creator

Picture 6-4 Qt Creator

6.16. PTP daemon

The PTP daemon implements the Precision Timer protocol (PTP) defined by the relevant IEEE1588 standard is applied to synchronize clocks throughout a computer network. The PTP daemon supports hardware and software time stamping which are dependent on NIC of your device. To develop the PTP daemon, please refer to http://linuxptp.sourceforge.net.
If the device is regarded as master, you can run :
ptpd2 –MECV –i eth0
If the device is regarded as the slave, you can run:
ptpd2 –sECV –i eth1
When using the hardware stamping, please add the parameter "—ptpengine:use_ libpcap=true".

7. Online extension and update

7.1. Java support

7.1.1. 32bit OS

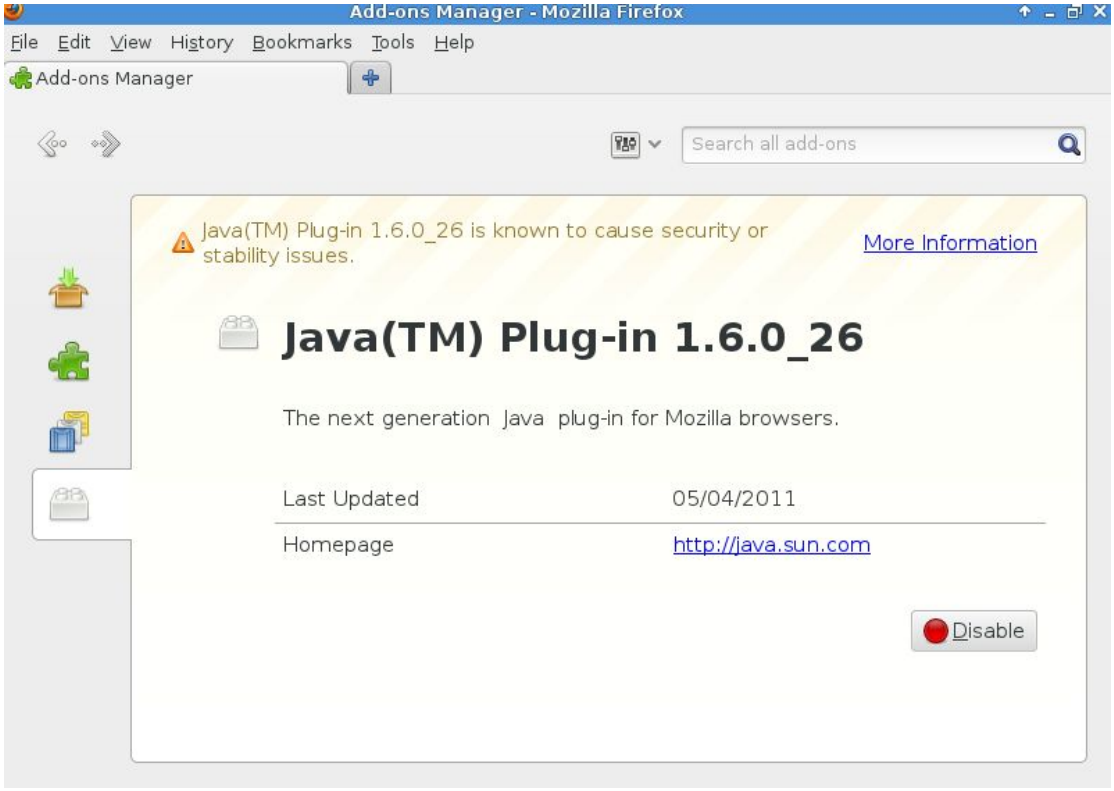
Download and Install JRE
jre-6u26-linux-i586-rpm.bin
http://javadl.sun.com/webapps/download/AutoDL?BundleId=49014
Copy it to AdvLinux, then to install it as follows:
#./jre-6u26-linux-i586-rpm.bin
Then, the JRE will be installed.

7.1.2. 64bit OS

Download and Install JRE
jre-8u60-linux-x64.rpm
http://javadl.sun.com/webapps/download/AutoDL?BundleId=109699
Copy it to AdvLinux, then to install it as follows:
#rpm -ivh jre-8u60-linux-x64.rpm
Then, the JRE will be installed.

7.2. Web Browser support java

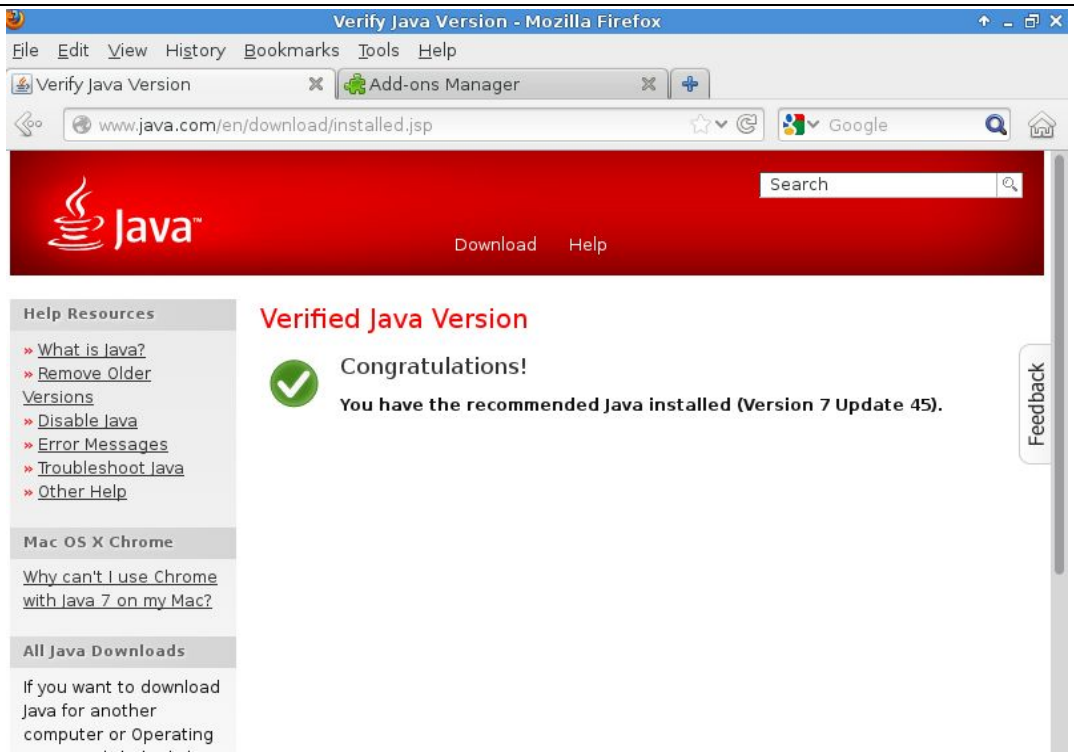
The default browser Firefox of AdvLinux3.0 supports java, if user want to support java in web browser, please configure it to support java in browser.
Then execute command as follows:
#cd /usr/lib/mozilla/plugins
#ln –s /usr/java/jre1.6.0_26/lib/i386/libnpjp2.so
This will add a plugin, you can find in firefox->Tools->Add-ons->Plugins as follows:



Picture 7-1 Firefox plugin

Online tools will tell you if Java is installed or enabled in Firefox.

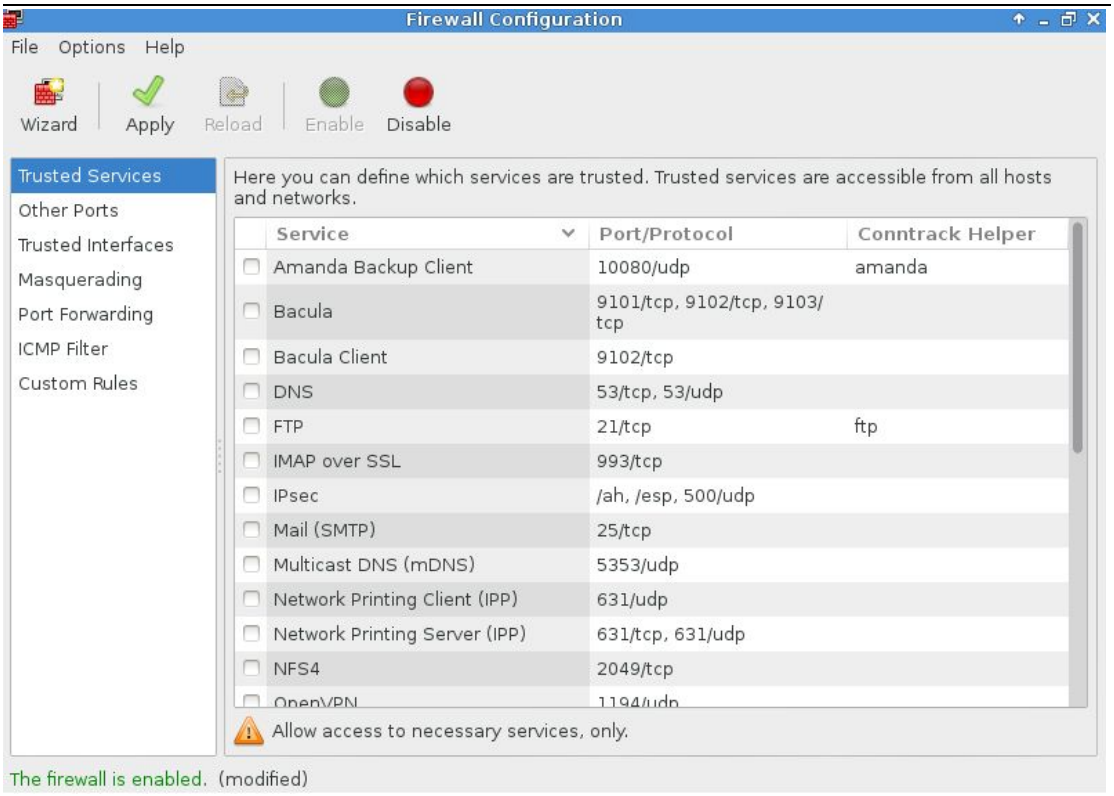
You can visit the Java test page at java.com to test whether jre is installed successfully and whether Firefox supports java. If successful, you will see the information marked by red line as follows



Picture 7-2 Test JRE

7.3. Install firewall manager

In console mode:
#yum install system-config-firewall
After the installation, the firewall manager will be shown:



Picture 7-3 Firewall Configuration

7.4. Install PDF view

#yum install evince

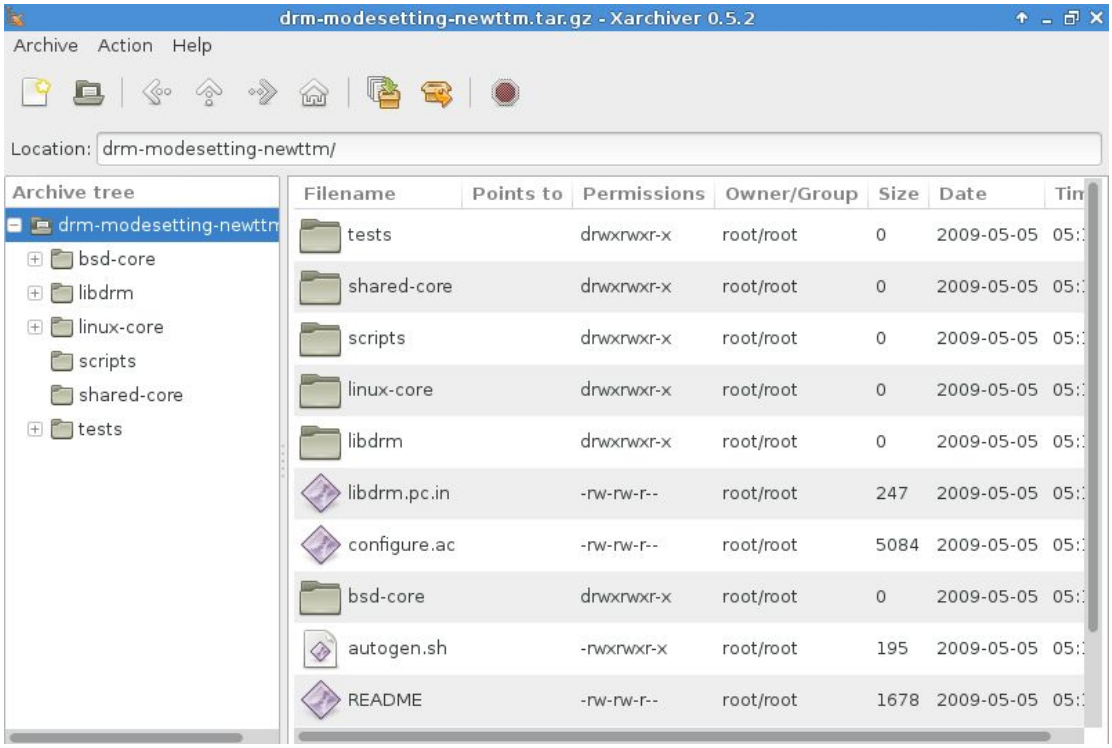
7.5. Install xarchiver

#yum install xarchiver

Xarchiver is a lightweight desktop independent archive manager built with the GTK+2 toolkit. It was my intention to develop a simple GUI which could be used with any desktop environment and would operate using the command line rather than API calls. Xarchiver has been designed from the ground up to be fast and easy-to-use. Its user interface is clean and intuitive, and does not include any confusing or useless options.

Xarchiver supports 7-zip, arj, bzip2, gzip, rar, lha, deb, rpm, tar and zip archives, archive navigation with mimetype icons, archive comment ability and archive listing as HTML or txt. Cut/Copy/Paste/Rename actions within files of different archives are supported too. Password detection is automatic for arj, zip and rar files. Password encryption is available for these file types, as well as 7-zip. Xarchiver can also generate self-extracting binaries from zip, 7-zip and rar archives and allows solid archives creation. It supports drag and drop through the XDS protocol, and Firefox-like tabs. An archive multi-extract ability with a progress bar is included. Last but not least, a progress bar window is available when using Xarchiver from the

command-line or from Thunar file-manager.



Picture 7-4 xarchiver

7.6. Support PCM-24S33G-AE Wireless Modules

AdvLinux fully supported PCM-24S33G-AE Wireless Modules. When you insert the SIM card in PCM-24S33G-AE Wireless Modules, you will see /dev/ttyACM0~ttyACM6 after system boot up. Before use it, you need to do some settings on OS.

I will give an example to show that how to use PCM-24S33G-AE Wireless Modules on UNO-2483G.

- Wireless Modules: PCM-24S33G-AE Wireless Modules
- SIM Card: China Mobile CMNET

7.6.1. Build a configuration file for wvdial.

User can use wvdialconf to build a configuration file for wvdial. The wvdialconf detects your modem, its maximum baud rate, and a good ini-tialization string and generates or updates the wvdial configuration file based on this information.

#wvdialconf /etc/wvdial.conf

The wvdialconf is completely non-interactive. You still need to edit /etc/wvdial.conf to specify the phone number, login name, and password of your internet account in order for wvdial to work. Open up /etc/wvdial.conf in your favorite text editor. Remove the ';' and fill in the appropriate fields- phone number, login name and password.

Example:
#vim /etc/wvdial.conf
[Dialer Defaults]
Init2 = ATQ0 V1 E1 S0=0 &C1 &D2 +FCLASS=0
Modem Type = USB Modem
Phone = *99***1#
ISDN = 0
Username = george
Init1 = ATZ
Password = gracie
Modem = /dev/ttyACM0
Baud = 460800

7.6.2. Run wvdial.

Run wvdial. Assuming that you filled in your phone number, username, and password correctly, wvdial will now dial your ISP. In a moment, Run "ifconfig" command, then you can see the device"ppp0". That means this dial-up is succeed. wvdial will not exit until the connection is terminated,you can do a Ctrl-C to terminate it.

8. Advantech device driver

It supports the Advantech eAutomation products, and the related drivers, such as Digital Input/Output, Watchdog, nvramdisk, these will be installed in the folder /usr/src/advantech, and loaded during the booting process. When the system boots up, all of these drivers will be loaded. Each driver is provided with test program in /usr/src/advantech/driver name/test/.

9. Development for AdvLinux

AdvLinux provide basis develop tool and library if user install profession system. User can develop console mode application or kernel driver in advantech Linux, if user want to develop Xwindow application, there may be Xwindow library and Xwindow development header files. Although all of them can be online installed by

yum, we suggest developing ON FC18 and copying the application to AdvLinux to execute. Here is some advice you may refer to when developing.

To develop xfce-based application, please refer to http://www.xfce.org for more information
To develop advantech driver based application, please refer to the example in /usr/src/advantech

To develop java-based application, please refer to http://www.sun.com

10. Backup and Restore

If you want to backup or restore your runtime AdvLinux3.0 system, you can use Advantech_RecoveryCD. Advantech Recovery CD is released as a CD image file. It can be used to backup and restore your system. Also you can deploy the secondary development system to a batch of devices of the same type. When you want to backup or restore system of AdvLinux3.0, you can use Advantech_RecoveryCD according to its manual.