

**DigitalPersona, Inc.**

# **One Touch<sup>®</sup> for Linux SDK**

Version 1.1

## **Installation Guide**



**DigitalPersona, Inc.**

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**Feedback**

Although the information in this guide has been thoroughly reviewed and tested, we welcome your feedback about any errors, omissions, or suggestions for future improvements. Please contact us at

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This installation guide provides the following documentation for the One Touch® for Linux SDK:

- System requirements
- Instructions for installing and uninstalling the various components of the product
- List of the files and directories that are installed on the hard disk
- System configuration information

This guide covers the installation of the One Touch for Linux SDK, which has been tested successfully on the Linux distributions listed below under System Requirements.

Additional Linux distributions may be added in the future. If you need a version of this SDK that supports a specific distribution not listed above, contact your sales representative.

The guide is a companion to the DigitalPersona One Touch for Linux Developer Guide that is included in the Docs folder in the SDK software package.

## System Requirements

This section defines the minimum software and hardware requirements needed to run the One Touch for Linux SDK with the listed distribution/kernel version.

- x86-based processor or better
- 128 MB of RAM, or the minimum amount required to run your Linux operating system
- Free USB port
- 1.7 MB free hard disk space
- One of the following supported Linux distributions:
  - Slackware® Linux 11, kernel version 2.4.33.3
  - Slackware® Linux 11, kernel version 2.6.18
  - Slackware® Linux 12, kernel version 2.6.21.5/-smp
  - Novell® Linux Desktop 9 SP3, kernel version 2.6.5-7.244-default/smp
  - Novell® Linux Point of Service (NLPOS) 9 SP2, kernel version 2.6.5-7.201-SLRS
  - Novell® Linux Point of Service (NLPOS) 9 SP3, kernel version 2.6.5-7.155.29-default/SLRS
  - Novell® SUSE Linux Enterprise Desktop (SLED) 10 SP1, kernel version 2.6.16.46-0.12-default/smp
  - Red Hat Enterprise Linux Work Station V3, kernel version 2.4.21-50.EL/smp
- GNU Compiler Collection (GCC) version 3.2.3, 3.3, 3.4, or 4.1

NOTE: The GCC version used to build the kernel on the target machine and the GCC version used to build the kernel module must match. The kernel mode drivers for this release were built using the following GCC versions.

<b>Kernel Mode driver</b>	<b>GCC Version</b>
2.4.21-50	GCC 3.2.3
2.4.33.3	GCC 3.4.6
2.6.5-7.155.29-default	GCC 3.3.3
2.6.5-7.155.29-SLRS	GCC 3.3.3
2.6.5-7.201-SLRS	GCC 3.3.3
2.6.5-7.244-default	GCC 3.3.3
2.6.5-7.244-smp	GCC 3.3.3
2.6.16.46-0.12-smp	GCC 3.4.6
2.6.18	GCC 3.4.6
2.6.21.5	GCC 4.1.2
2.6.21.5-smp	GCC 4.1.2

## Kernel Mode Driver from Source Code

This product includes prebuilt Linux kernel mode drivers. During installation, you will be notified if your system does not match one of the Linux kernel versions required to run these drivers. You will then be advised to install one of the kernel source packages included in the One Touch for Linux SDK product package.

There are two kernel source packages located in the `redistr/` directory: `DigitalPersona-fpkrndrv-source-1.1.0-1.i586.rpm` and `DigitalPersona-fpkrndrv-source-1.1.0-1.i586.tar.gz`.

If you are using Linux kernels 2.4.33 or 2.6.5 through 2.6.21, you can build the kernel mode driver from the source code included in these packages. If you are not using these kernel versions, you can attempt to modify the source code and build your own kernel mode driver.

# Installing the SDK

Follow the instructions in this section to install the One Touch for Linux SDK.

**IMPORTANT:** You must be root to install the One Touch for Linux SDK.

## To install the One Touch for Linux SDK

1. Change to the SDK software package directory.
2. Run **setup.sh**.
3. Follow the prompts as they appear. You may choose to quit the installation at any time.
  - You may be prompted to choose a package: RPM or TAR.
  - After the text of the End User License Agreement (EULA) is displayed, choose to agree or not to agree with its terms.
  - If you have agreed to the terms of the EULA, choose to install the SDK product.

Table 1 describes the files and directories that are installed on your hard disk.

**Table 1.** One Touch for Linux SDK files and directories installed on your hard disk

Directory	File	Description
/etc/DigitalPersona	fpToolkit.reg	Registry file for fingerprint recognition libraries
/etc/DigitalPersona/driver		Reserved for binary files that will contain persistent data created by the user mode driver
/opt/DigitalPersona/OneTouchSDK/docs	One_Touch_for_Linux_SDK_Developer_Guide.pdf	DigitalPersona One Touch for Linux Developer Guide v1.1
	One_Touch_for_Linux_SDK_Installation_Guide.pdf	Installation Guide
/opt/DigitalPersona	dpuninst_rpm.sh	Uninstallation file for the RPM package (This file is only installed if you install the RPM package.)

**Table 1.** One Touch for Linux SDK files and directories installed on your hard disk (*continued*)

Directory	File	Description
/opt/DigitalPersona/ drivers	hotplug.sh  (Presence of the following files depend on the distribution on which the SDK is installed.)  dp.udev.rules   mod_usbdfp.o  mod_usbdfp.ko	Script that enables or disables the USB hotplug device    Directs the kernel to generate device files with specified permissions for kernel version 2.6 only  Kernel mode driver for kernel version 2.4  Kernel mode driver for kernel version 2.6
/opt/DigitalPersona/ OneTouchSDK/include	dpDefs.h   dpFtrEx.h   dpMatch.h   dpRCodes.h   dpfp_api.h   dpfp_api_errors.h	Fingerprint feature extraction and comparison modules API definitions   Fingerprint feature extraction module API function definitions  Fingerprint comparison module API function definitions  Fingerprint feature extraction and comparison modules API return codes  Device component API definitions  Device component API return codes
/opt/DigitalPersona/lib	libdpD00701.so -> libdpD00701.so.1 libdpD00701.so.1 -> libdpD00701.so.1.1.0 libdpD00701.so.1.1.0  libdpDevMgr.so -> libdpDevMgr.so.1 libdpDevMgr.so.1 -> libdpDevMgr.so.1.1.0 libdpDevMgr.so.1.1.0  libdpDrvApi.so -> libdpDrvApi.so.1 libdpDrvApi.so.1 -> libdpDrvApi.so.1.1.0 libdpDrvApi.so.1.1.0	User mode driver libraries

**Table 1.** One Touch for Linux SDK files and directories installed on your hard disk (*continued*)

Directory	File	Description
	libdpDrvDatApi.so -> libdpDrvDatApi.so.1 libdpDrvDatApi.so.1 -> libdpDrvDatApi.so.1.1.0 libdpDrvDatApi.so.1.1.0 libdpFC.so -> libdpFC.so.1 libdpFC.so.1 -> libdpFC.so.1.1.0 libdpFC.so.1.1.0 libdpI00701.so -> libdpI00701.so.1 libdpI00701.so.1 -> libdpI00701.so.1.1.0 libdpI00701.so.1.1.0 libdpObjMgr.so -> libdpObjMgr.so.1 libdpObjMgr.so.1 -> libdpObjMgr.so.1.1.0 libdpObjMgr.so.1.1.0 libdpUsbAda.so -> libdpUsbAda.so.1 libdpUsbAda.so.1 -> libdpUsbAda.so.1.1.0 libdpUsbAda.so.1.1.0	
	libdpfpapi.so -> libdpfpapi.so.1 libdpfpapi.so.1 -> libdpfpapi.so.1.1.0 libdpfpapi.so.1.1.0	Device component library
	libdpMatch.so -> libdpMatch.so.4 libdpMatch.so.4 -> libdpMatch.so.4.1.2 libdpMatch.so.4.1.2	Fingerprint comparison module library
	libdpFtrEx.so -> libdpFtrEx.so.4 libdpFtrEx.so.4 -> libdpFtrEx.so.4.1.2 libdpFtrEx.so.4.1.2	Fingerprint feature extraction module library

**Table 1.** One Touch for Linux SDK files and directories installed on your hard disk (*continued*)

Directory	File	Description
/opt/DigitalPersona/ OneTouchSDK/sample	Makefile actions.c actions.h database.c database.h sample sample.c ui.c ui.h	This directory contains a sample Linux project that shows how to use the One Touch for Linux SDK.
/opt/DigitalPersona/ OneTouchSDK/sample/bin	sample	Sample executable file



## Installing the Runtime Environment

Follow the instructions in this section to install the One Touch for Linux SDK Runtime Environment (RTE).

**IMPORTANT:** You must be root to install the One Touch for Linux SDK RTE.

### **To install the One Touch for Linux SDK RTE**

1. Change to the SDK software package directory.
2. Run **setup.sh**.
3. Follow the prompts as they appear. You may choose to quit the installation at any time.
  - You may be prompted to choose a package: RPM or TAR.
  - After the text of the End User License Agreement (EULA) is displayed, choose to agree or not to agree with its terms.
  - If you have agreed to the terms of the EULA, choose to install the RTE product.

Table 2 describes the files and directories that are installed on your hard disk.

**Table 2.** One Touch for Linux RTE files and directories installed on your hard disk

Directory	File	Description
/etc/DigitalPersona/driver		Reserved for binary files that will contain persistent data created by the user mode driver
/opt/DigitalPersona	dpuninst_rpm.sh	Uninstallation file for the RPM package (This file is only installed if you install the RPM package.)
/opt/DigitalPersona/drivers	hotplug.sh (Presence of the following files depend on the distribution on which the SDK is installed.) dp.udev.rules  mod_usbdfpf.o  mod_usbdfpf.ko	Script that enables or disables the USB hotplug device  Directs the kernel to generate device files with specified permissions for kernel version 2.6 only  Kernel mode driver for kernel version 2.4  Kernel mode driver for kernel version 2.6
/opt/DigitalPersona/lib	libdpD00701.so -> libdpD00701.so.1 libdpD00701.so.1 -> libdpD00701.so.1.1.0 libdpD00701.so.1.1.0  libdpDevMgr.so -> libdpDevMgr.so.1 libdpDevMgr.so.1 -> libdpDevMgr.so.1.1.0 libdpDevMgr.so.1.1.0  libdpDrvApi.so -> libdpDrvApi.so.1 libdpDrvApi.so.1 -> libdpDrvApi.so.1.1.0 libdpDrvApi.so.1.1.0  libdpDrvDatApi.so -> libdpDrvDatApi.so.1 libdpDrvDatApi.so.1 -> libdpDrvDatApi.so.1.1.0 libdpDrvDatApi.so.1.1.0  libdpFC.so -> libdpFC.so.1 libdpFC.so.1 -> libdpFC.so.1.1.0 libdpFC.so.1.1.0	User mode driver libraries

**Table 2.** One Touch for Linux RTE files and directories installed on your hard disk *(continued)*

Directory	File	Description
	libdpI00701.so -> libdpI00701.so.1 libdpI00701.so.1 -> libdpI00701.so.1.1.0 libdpI00701.so.1.1.0	
	libdpObjMgr.so -> libdpObjMgr.so.1 libdpObjMgr.so.1 -> libdpObjMgr.so.1.1.0 libdpObjMgr.so.1.1.0  libdpUsbAda.so -> libdpUsbAda.so.1 libdpUsbAda.so.1 -> libdpUsbAda.so.1.1.0 libdpUsbAda.so.1.1.0	
	libdpfpapi.so -> libdpfpapi.so.1 libdpfpapi.so.1 -> libdpfpapi.so.1.1.0 libdpfpapi.so.1.1.0	Device component library
	libdpMatch.so -> libdpMatch.so.4 libdpMatch.so.4 -> libdpMatch.so.4.1.2 libdpMatch.so.4.1.2	Fingerprint comparison module library
	libdpFtrEx.so -> libdpFtrEx.so.4 libdpFtrEx.so.4 -> libdpFtrEx.so.4.1.2 libdpFtrEx.so.4.1.2	Fingerprint feature extraction module library

## Enabling and Disabling the USB Hotplug Device

**IMPORTANT:** You must be root to enable or disable the USB hotplug device.

**To enable or disable the USB hotplug device**

- Run **/opt/DigitalPersona/drivers/hotplug.sh**.

This creates a new directory -

`/lib/modules/$(uname -r)/kernel/drivers/biometric/`

if not already present, and copies the file `mod_usbdfp.ko` (for 2.6 kernels) or `mod_usbdfp.o` (for 2.4 kernels) into the directory.

## Allowing User Accounts to Access the Fingerprint reader

To allow user accounts to access the fingerprint reader

**Slackware 11, kernel 2.4:** You will need to change the permissions for the following files, which are not created until you enable the USB hotplug device. You must be root to modify these files.

- Change the permissions for each device by running the following command, where X is the device sequence number from 0 to 15:

**chmod 666 /dev/usbdfpX.**

**Slackware 11/12, kernel 2.6 and SLED 10, kernel 2.6:** You will need to run the following file to modify the `rules.d` file. You must be root to modify these files.

- Run **cp /opt/DigitalPersona/drivers/dp.udev.rules /etc/udev/rules.d**.

**Novell Linux POS 9 and NLD 9:** You will need to change the udev permissions. You must be root to change the udev permissions.

- Add the following line to `/etc/udev/<udev.permissions>`, where `<udev.permissions>` is the name of the udev permissions file:

**usbdfp\*:root:users:666**

## Verifying the Kernel Mode Driver

To verify that the kernel mode driver is loaded

- Hotplug the device.
- Run **lsmod | grep mod\_usbdfp**.

## Uninstalling the SDK and the RTE

Use the following procedure to uninstall the SDK or the RTE, including the kernel mode driver. RPM package.

1. If you enabled hotplug of the fingerprint reader using the hotplug.sh script, run **/opt/DigitalPersona/drivers/hotplug.sh** to disable hotplug of the fingerprint reader.
2. Uninstall the SDK or RTE.
  - If installed using the RPM package, run **/opt/DigitalPersona/dp.uninst\_rpm.sh**.
  - If installed using the TAR package, run **rm -rf /opt/DigitalPersona/**.