IBM JavaPOS For Linux v1.12.0 Installation Instructions (2.6 Kernel)

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Summary of Changes

Changes resulting in document revisions will be summarized in this table in reverse chronological sequence. Revision bars (|) will highlight the text changed in new document versions.

Version	Approval Date	Change Description
V 1.12.0	05/08/09	Initial version

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1.0 Overview

1.1 Introduction

This document provides installation instructions for IBM JavaPOS on Linux distributions. Currently the IBM JavaPOS is fully supported on SUSE Linux Retail Solutions (SLED/SLES 11). Therefore, the instructions in this document are based upon the SUSE Linux file structure. The IBM JavaPOS installation can be adapted to other Linux distribution as described in this document.

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The JavaPOS drivers provided here are on **as-is basis**. If support for other Linux distribution is desired, please contact IBM representative or visit IBM support site http://www.ibm.com/solutions/retail/store/support/

IBM System Management information is not covered in document; refer to the IBM UnifiedPOS Management Services document for installation details.

1.2 Disclaimer and Known Issues

The IBM JavaPOS installation instructions have not been tested on other Linux Distributions and are not supported. The instructions in this documented are provided as-is.

LINUX DISTRIBUTION	KERNEL VERSION	STATUS
SLED\SLES 11	2.6.27.19-5-pae	Tested with IBM UnifiedPOS for Linux 1.12

1.3 Relevant Publications

IBM UnifiedPOS Programming Reference, Keyboards, and Codepages at
http://www.ibm.com/solutions/retails/store/support/

2.0 Installation Package Contents

The following main installation package can be downloaded from http://www.ibm.com/solutions/retail/store/support/:

The following lists of RPMs are necessary to install IBM JavaPOS product

- JavaPOS
  - ibm-javapos-<version>-<build>.i386.rpm
  - ibmposs -gcc43<version>-<build>.i386.rpm
- IBM JVM
  - ibm-java2-i386-jre-5.0-9.0.i386.rpm
  - ibm-java2-i386-javacomm-5.0-9.0.i386.rpm
- JavaxUsb
  - javax-usb-1.0.2-1.i386.rpm
  - javax-usb-ri-1.0.2-1.i386.rpm
  - javax-usb-ri-linux-1.0.2-1.i386.rpm
- Kernel Mode Drivers Source
  - ibmposs-kernel-<version>-<build>.i386.rpm
  -
- IBM JavaPOS for Linux v1.12 Installation Instructions.htm or pdf (this document)
- IBM UnifiedPOS Management Services v112.pdf
  - Systems management support document

2.1 SLED/SLES Package dependencies

During the SLED/SLES Operating System Installation be sure to select the following options, they will be necessary for the IBM UnifiedPOS product.

From Development the C/C++ compiler and tools ,

Install “libstdc++.so.5” library from “libstdc++33” rpm, it is a dependency for IBM JVM 5 SR9

3.0 JavaPOS Installation

The instructions in this document assume the following:

- User has root privileges
- % represents console command prompt
- The comments are indicated by #.

The JavaPOS driver installation includes several components as described below, and they mu st be installed separately. You must be root to install the files and perform many of the steps described in this document.

3.1 JavaPOS Components

The JavaPOS rpms are required to support IBM JavaPOS and RS485 devices.

To Install:

```
% rpm -ivh ibmposs-gcc43<version>-<build>.i386.rpm
% rpm  -ivh ibm-javapos-<version>-<build level>.i386.rpm
```

To uninstall:

% rpm -e `ibmposs-gcc43`

% rpm -e `ibm-javapos`

3.2 javax.usb Components

The javax.usb rpms are required to support IBM USB peripheral devices.

To Install:

```
% rpm -ivh javax-usb-<version>.i386.rpm
% rpm -ivh javax-usb-ri-<version>.i386.rpm
% rpm -ivh javax-usb-ri-linux<version>.i386.rpm
```

To uninstall:

% rpm -e javax-usb

% rpm -e javax-usb-ri

% rpm -e javax-usb-ri-linux

3.3 IBM JVM

The JVM component includes two rpms – one for JVM and the other for Java COMM support. Install both JVM rpms:

To Install:

% rpm -ivh ibm-java2-i386-jre-5.0-9.0.i386.rpm

% rpm -ivh ibm-java2-i386-javacomm-5.0-9.0.i386.rpm

To uninstall:

% rpm -e ibm-java2-i386-jre-5.0-9.0

% rpm -e ibm-java2-i386-javacomm-5.0-9

Setup path and symbolic links:

If Operating System provides a default JVM or you have previously installed another JVM, then symbolic links and the paths must be set manually to point to IBM JVM.

- Remove old java symbolic links and re-link them to IBM JVM.
  - rm /usr/bin/java, and ln -s /opt/ibm/java2-i386-50/jre/bin /usr/bin/java

- setup path. As necessary This can be added to your .profile
  - export PATH=/opt/ ibm/java2-i386-50/jre/bin:$PATH$

- check IBM JVM Version: java –version, it should read something like

```
java -version
java version "1.5.0"
Java(TM) 2 Runtime Environment, Standard Edition (build pxi32dev-20081129 (SR9-0 ))
IBM J9 VM (build 2.3, J2RE 1.5.0 IBM J9 2.3 Linux x86-32 j9vmxi3223-20081129 (JIT enabled)
```

3.4 Install IBM Point of Sale (POS) Kernel Mode Drivers

For 2.6 Linux Kernel, IBM provides the source files for the required kernel mode in the form a rpm file. The source files must be compiled and installed for the specific kernel version. The rpm file provides necessary make file to compile and install the drivers.

3.4.1 Novell SLE 11 Linux

For Novell SLE 11 Linux distributions, you can obtain the pre-compiled IBM Point of Sale (POS) drivers, in the form of rpm, directly from Novell's website. If you need help, please submit TechLine request at IBM support site: http://www.ibm.com/solutions/retail/store/support/:

3.4.2 Other Linux Distributions

For other Linux distributions, the IBM Point of Sale (POS) drivers must be compiled on the specific kernel version. The process of compiling and installing IBM POS drivers is very simple.

Install Kernel Source (pre-requisite):

To compile IBM drivers successfully, you must first install kernel source code. The kernel source should be available on install CD or from the location you obtained the kernel. If the kernel source does not exist, the IBM drivers will not compile successfully.

Extract IBM driver source:

% rpm -i ibmposs-kernel-<version>-<build>.i386.rpm

This will extract the driver source files into two separate directories

- /usr/src/<kernel-version>//kernel-modules/ibm/dcs/
- /usr/src/<kernel-version>//kernel-modules/ibm/ kbd/

Build and Install IBM drivers:

Note: Before proceeding with building IBM drivers, ensure that you have installed linux kernel sources.

Build and install drivers in dcs directory:

- % cd /usr/src/<kernel-version>//kernel-modules/ibm/dcs
- % make # to compile drivers
- % make install # to intall drivers
- % depmod –ae # This must be done to satisfy module dependency in modules.def file.

Build and install drivers in kbd directory:

- % cd /usr/src/<kernel-version>//kernel-modules/ibm/ kbd
- % make # to compile drivers
- % make install # to install drivers.
- % depmod –ae # This must be done to satisfy module dependency in modules.def file.

IBM driver install location:

The drivers will be installed in the following locations:

/lib/modules/<kernel-version>/kernel/drivers/char/dcs
/lib/modules/<kernel-version>/kernel/drivers/input/keyboard

The driver details:

`aipdcs.ko`	# This is the **core** driver for RS485 devices, NVRAM, and PCI Cash Drawer
`aipbcd.ko`	# Cash Drawer drivers for SP300
`aipmtn.ko`	# Motion Sensor driver for Anyplace Kiosk
aipikbps.ko	# PS/2 keyboard driver
aipsocdkl.ko	# SurePOS 100/SureOne: CashDrawer and Keylock driver
aipsokbps.ko	# SurePOS 100: PS/2 Keyboard driver

3.5 Serial Ports Configuration

The IBM SurePOS 500 systems require configuring additional com ports. See IBM support website http://www.ibm.com/solutions/retail/store/support/ for details of setting up serial ports for various IBM POS systems.

By default, the operating system does not provide access to serial ports to users. As a root, you must access to the users:

Manual Configuration - Add permissions to serial ports

Run 'chmod 666 /dev/ttyS?'

Automatic Configuration using udev a rule

a. Create a file named '`40-ibmjavapos.rules`' at '`/etc/udev/rules.d`'

b. Add the following line to the file:

```
KERNEL=="ttyS*", MODE="0666", GROUP="users"
```

c. Restart your system

3.6 USB Device Access

To access IBM USB devices via javax.usb, you must create a rule at udev directory.

For example, to Provide access to all USB devices :

1) Edit the "/etc/udev/rules.d/55-libsane.rules" rule file,

2) Right after the "LABEL="libsane_rules_begin" line add:

ATTR{idVendor}=="*", ATTR{idProduct}=="*", MODE="0666", GROUP="users", ENV{libsane_matched}="yes"

3.7 PS2 Keyboard Configuration

No additional configuration is required to enable PS/2 scancodes.

The following information is provided in case of any issues with IBM PS/2 attached POS Keyboard.

By default the operating system has disabled the generation of raw scan codes for the keyboards, after rpm's installation IBM drivers will enable raw_scan codes on your system.

How to know the status of atkbd.softraw?

Run the command: 'cat /sys/bus/serio/drivers/atkbd/serio0/softraw', raw scan codes need atkbd.softraw as disabled ('0')

Manual Configuration

Add the following configuration to enable them

Automatic configuration updating grub:

Edit the '/boot/grub/menu.1st' and add the "atkbd.softraw=0" argument to the kernel line

For example:

```
title SUSE Linux2 enterprise Desktop 11 - 2.6.27.19-5-pae
    root (hd0,6)
    kernel /boot/vmlinuz-2.6.27.13-1-pae root=/dev/disk/by-id/ata-
WDC_WD800BB-23FRA0_WD-WCAJD1482394-part7 resume=/dev/disk/by-id/ata-
WDC_WD800BB-23FRA0_WD-WCAJD1482394-part6 splash=silent showopts vga=0x34b
atkbd.softraw=0
    initrd /boot/initrd-2.6.27.19-5-pae
```

4.0 Additional Information

4.1 The USB Alphanumeric POS Keyboard does not receive scancodes

The problem may be caused by different reasons, the most common problem is the /dev/input/event<number> does not have the right permissions, do the following steps to validate this problem

1. List the USB devices and identified the event associated to your keyboard:
    a. Run 'cat /proc/bus/input/devices' and search for an entry of your POSKeybard, it should be like:

```
I: Bus=0003 Vendor=04b3 Product=4604 Version=0100
N: Name="(c) Copyright IBM Corp. 2008 IBM Retail USB Alphanumeric POS Keyboard
"
P: Phys=usb-0000:00:1d.0-1.4/input0
S: Sysfs=/devices/pci0000:00/0000:00:1d.0/usb4/4-1/4-1.4/4-1.4:1.0/input/input4
U: Uniq=
H: Handlers=kbd event0
B: EV=120013
B: KEY=10000 7 ff9f207a c14057ff febeffdf ffefffff ffffffff fffffffe
B: MSC=10
B: LED=1f
```

    b. The 'event0' is associated to the POS Keyboard
2. Review the event node has the right permissions, it should have 666:
    a. Run '`ls -la /dev/input/event?`'
3. Manual Fix: Add permissions to the event node
    a. Run 'chmod 666 /dev/input/event0'
4. Automatic fix: Add a udev rule to set the permissions when the USB keyboard is hot-plugged
    d. Create a file named '`40-ibmjavapos.rules`' at '`/etc/udev/rules.d`'
    e. Add the following line to the file:

```
KERNEL=="event*", NAME="input/%k", MODE="0666", GROUP="users"
```

    f. Restart your system

4.2 Known GUI Issues

On certain systems, for example SurePOS 300 (4810-34x), you might see GUI applications may not displayed correctly. This is due to conflicts with IBM JMV 1.5-SR9 and Desktop effects which is enabled on SLE 11 by default.

To resolve this issue, disable Desktop Effects on SLE 11 as follows:

Go to Computers → More Applications → Desktop Effects (Under Tools), and uncheck "Enable Desktop Effects"

4.3 IBM Systems and COM Port Assignments Reference

Some POS Systems by default may not map correctly the serial COM ports; use the following reference to identify your COM ports :

System : Model	COM Port Label	COM Port assignment	JavaPOS device mapping (jpos.xml)
All POS Systems			
Common	A	/dev/ttyS0	COM1
	B	/dev/ttyS1	COM2
SurePOS 700			
4800-7x3	C	/dev/ttyS4	COM5
4800-7x2	D	/dev/ttyS5	COM6
4800-7x1	C	/dev/ttyS5	COM6
	D	/dev/ttyS4	COM5
4800-7x3 (with EIA232 IO Card)	E	/dev/ttyS6	COM7
4800-7x2 (with EIA232 IO Card)	F	/dev/ttyS7	COM8
4800-7x1 (with EIA232 IO Card)	H	/dev/ttyS3	COM4
SurePOS 500			
4846-545/565	C	/dev/ttyS5	COM6
	D	/dev/ttyS3	COM4
4851-514	C	/dev/ttyS4	COM5
	D	/dev/ttyS3	COM4
4840-5x3	C	<TBD>	<TBD>
	D	/dev/ttyS5	COM6
SurePOS 300			
4810-34x (with EIA232 IO Card)	C	/dev/ttyS7	COM8
	D	/dev/ttyS4	COM5
	E	/dev/ttyS5	COM6
	F	/dev/ttyS6	COM7
4810-33x	C	/dev/ttyS6	COM7
4810-32x	D	/dev/ttyS7	COM8
	E	/dev/ttyS4	COM5
	F	/dev/ttyS5	COM6
4810-34x (with USB IO Card)	C	<TBD>	<TBD>
AnyPlace Kiosk			
4838-5xx/7xx/9xx 4838-5xx/7xx/9xx 4838-13x	See Common	See Common	See Common

System : Model	COM Port Label	COM Port assignment	JavaPOS device mapping (jpos.xml)
SurePOS 100			
4613-108	C	/dev/ttyS2	COM3
4613-118	D	/dev/ttyS3	COM4
	Printer	/dev/ttyS4	COM5