Toshiba Global Commerce Solutions
Point-of-Sale Subsystem

TOSHIBA

Toshiba JavaPOS Installation Instructions for Linux_x64

Version 1.14.11

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	Release Date mm/dd/yyyy	Change Description
V1.0	05/11/2018	Initial release
V1.1	08/02/2018	Added installation instructions for Ubuntu
V1.2	08/06/2018	Minor updates
V1.3	10/22/2018	Updates to Appendix 6 and file version for 1.14.4
V1.4	10/31/2018	Removed unnecessary firmware update configuration.
V1.5	01/01/2018	Addition of firmware update configuration for user's reference.
V1.6	12/20/2018	Power Management instructions were included.
V1.7	02/22/2019	Update instructions for Ubuntu
V1.8	03/28/2019	Add dkms instructions to compile Kernel-mode Driver
V1.9	05/17/2019	Typos and minor updates / Remove dkms instructions
V1.10	06/18/2019	Add support for System Management in Ubuntu
V1.12	07/02/2019	Fix typos and clarify the SFCB configuration
V1.13	07/26/2019	Remove rpm to deb instructions
V1.14	08/06/2019	Add POS Kernel-mode driver instructions for Ubuntu
V1.15	12/09/2019	Add JVM x86 instructions for Ubuntu
V1.16	04/15/2020	Add instructions for dkms in Ubuntu
V1.17	08/24/2020	Updates for the 1.14.7 release.
V1.18	01/12/2021	Initial version for 1.14.8 release.
V1.21	07/09/2021	Update Suse12 section for 1.14.9 release
V1.22	10/20/2021	Add dependencies for SLE15 and System Management Instructions
V1.23	26/05/2022	Separate instructions for ".deb" and ".rpm" packages
V1.24	13/07/2022	Update for 1.14.10 release
V1.25	30/11/2022	Update for 1.14.11 release
V1.26	14/12/2022	Add instructions to fix libgcc-s1 dependency on Ubuntu 18.04

Table of Contents

1.0 Overview

This document provides Installation Instructions for Toshiba JavaPOS 1.14.11 on 64-bit Linux distributions. The 64-bit JavaPOS release is distributed on demand by approval. For more details, please refer to Toshiba UPOS User's Guide located under /opt/tgcs/javapos/config directory.

Restrictions and Limitations:
The JavaPOS drivers do not distribute any JVM. The end-user can use 64-bit OpenJDK 8 available on Linux distribution.

Dependencies

Component	Description
JVM (64-bit)	Install 64-bit OpenJDK 8 available on Linux distribution. The JavaPOS drivers are tested with 64-bit OpenJDK 8.
RxTx (64-bit)	This component is required to support RS232 devices on JavaPOS drivers. Refer to RxTx Libraries section 7.2
Configuration	Refer to Configuration for non-root user section 4.0

Release Contents:

The Toshiba JavaPOS release package includes the files described in the table below.

JavaPOS Drivers	toshiba-javapos-<version>.x86_64 toshibaposs-gcc48-<version>.x86_64
JavaxUSB Drivers	javax-usb-1.0.2-1.x86_64 javax-usb-ri-1.0.1-2.x86_64 javax-usb-ri-linux-1.0.3-2.x86_64 These rpms provide support for USB devices.
RS232 Device support	rxtx-2.2-pre2.03.x86_64 Install this rpm if support for RS232 devices is required.
Kernel-Mode Drivers	toshibaposs-kernel-<version>.x86_64 located under /poss_kernel_drivers_other_linux folder This rpm contains source code for Toshiba kernel-mode drivers. The drivers must be built and installed on selected Linux distribution. For details, refer to the “POS Kernel-Mode Drivers” section

All these packages are in the “.rpm” and “.deb” versions.

2.0 JavaPOS Installation

The instructions in this section assume the following:

- The user has root privileges

Identify the packages your Linux distribution support:

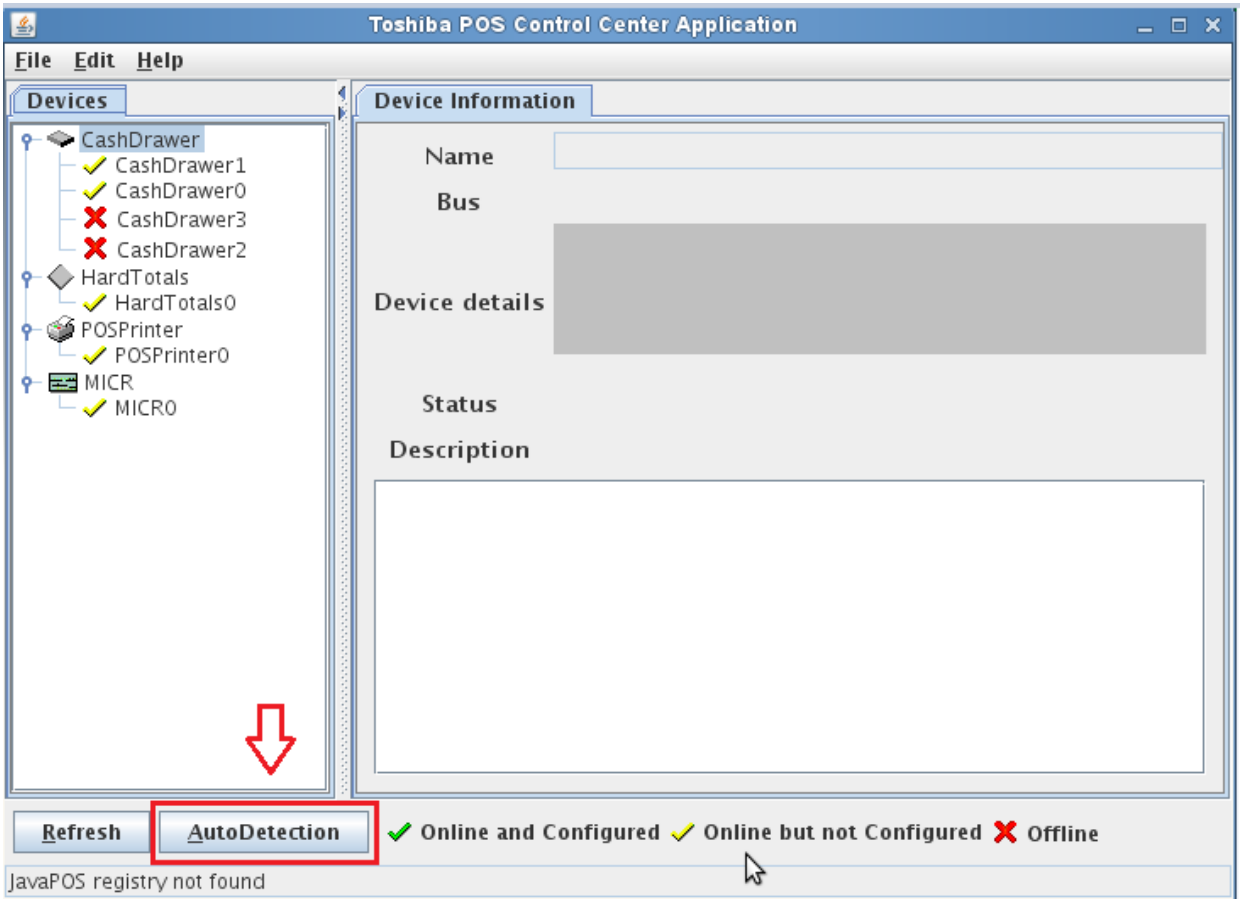
- **deb** – see Appendix – Installation Instructions for ".deb" packages
- **rpm** – see Appendix – Installation Instructions for ".rpm" packages

3.0 Device Configuration and Device Demo

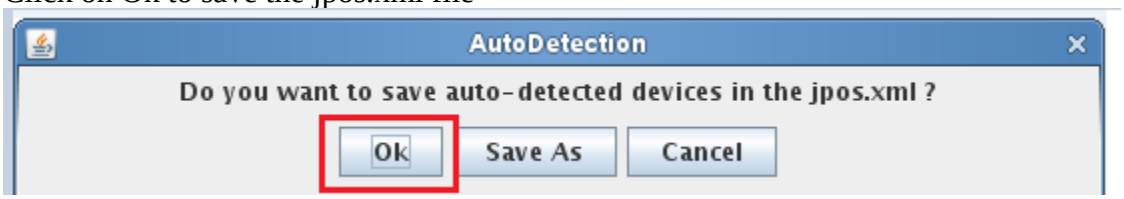
You can configure the devices and test them using POSControlCenter Utility. Below are step-by-step instructions.

1. Open a console
2. Enter **POSControlCenter**

   Click on AutoDetection – The POS Control Center will automatically detect USB/RS485 connected devices automatically.



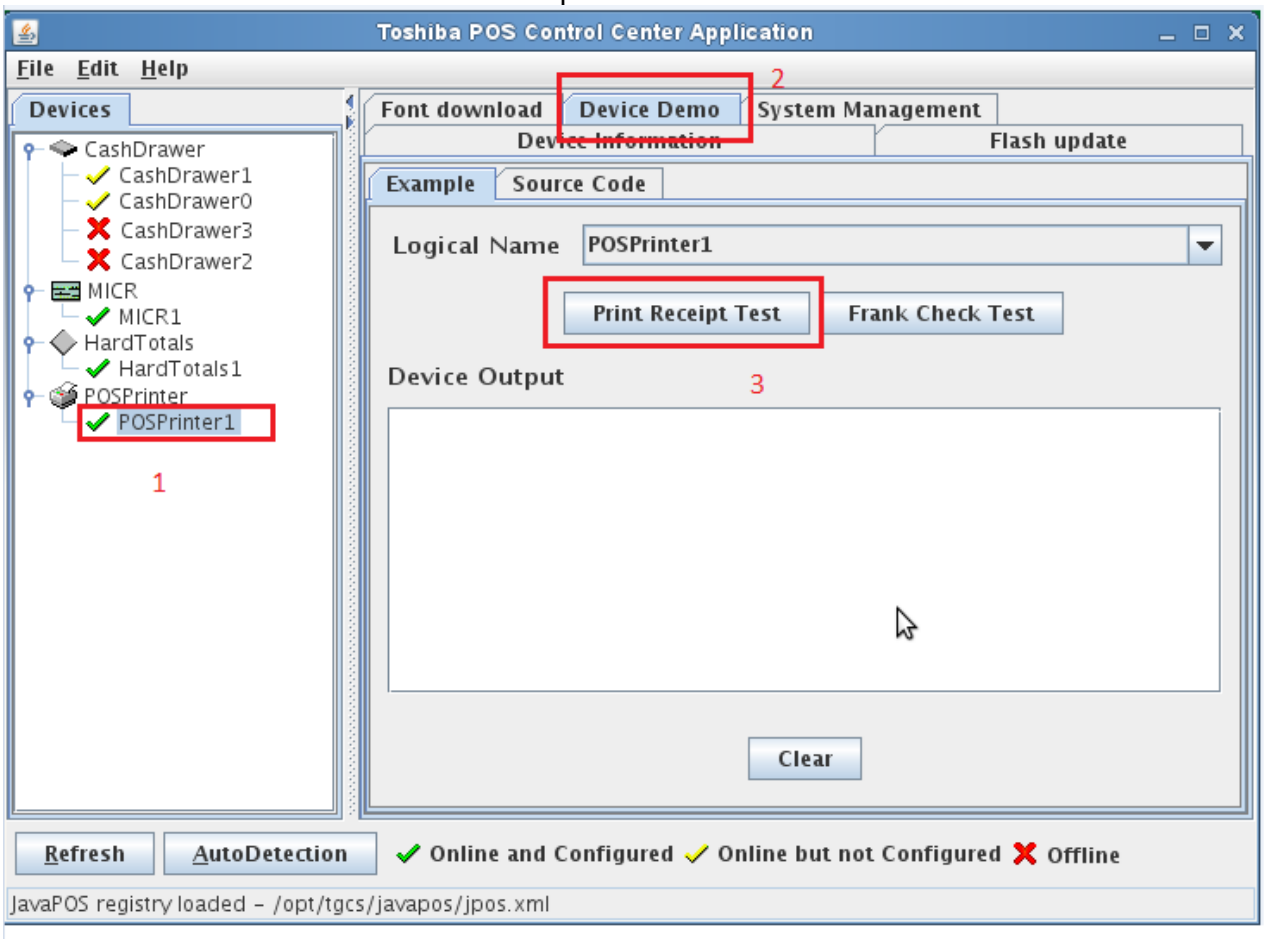
Click on Ok to save the jpos.xml file



Once devices are configured, they will be highlighted with a green checkmark indicating that the devices are online. At this point, you can also test the device to ensure that they are functioning correctly. The POS Control Center will perform a simple device exercise.

Below is an example to exercise the attached USB POS Printer.

- Select the device on the left pane
- Select the Device Demo tab on the right pane
- Click on Print Receipt Test



4.0 Configuration for non-root users

4.1 USB device access

The operating system does not, by default, provide users with access to USB devices. The JavaPOS RPM automatically enables USB device user access on your system for members belonging to the user group.

Make sure the user is added to the group “users”

- # usermod -a -G users <username>

4.2 Serial port access

RxTx implementation uses lock files to deal with the concurrency of the serial port communication and requires writing access to the following location:

- /var/lock

On CentOS 7, perform following steps with root privileges:

- # usermod -a -G lock <username>
- # chown root:lock /var/lock
- # chmod g+rw /var/lock

On SLE 12, perform the following steps with root privileges:

- # usermod -a -G lock <username>
- log out
- log in

5.0 Debugging

Refer to Chapter 4 Problem Determination of Toshiba UnifiedPOS User's Guide for enabling tracing.

You can use one of the 2 methods described below for a quick reference.

5.1 Using TraceConfigTool GUI

From a console, enter TraceConfigTool. A graphical Windows will be displayed.

5.2 Manual Method

If TraceConfigTool is not installed through toshibaposs-xxx. rpm, then you can use the manual method. The JavaPOS tracing can also be enabled and disabled by modifying a few properties in jutil.properties file. By default, JavaPOS tracing is disabled in this configuration file.

Edit /opt/tgcs/javapos/etc/jutil.properties, and make the changes, as shown below.

Enable JavaPOS Tracing:

1. Uncomment or delete comment char '#' for the line, as shown below
   - com.ibm.jutil.tracing.TurnOnAllNamedTrace = ON
2. Replace 'AipTraced' with 'File, for the property as shown below
   - com.ibm.jutil.TracerOutputTo = File
3. Change location of Output Trace File location, as shown below
   - com.ibm.jutil.tracing.TracerOutputFileName = /var/log

Output Trace file:
The output JavaPOS log file will be in /var/log/tgcsjavapostraceX.txt where X can be 1-N.

Disable JavaPOS Tracing:

1. Replace 'ON' with 'OFF' for the line, as shown below.
   - com.ibm.jutil.tracing.TurnOnAllNamedTrace = OFF

6.0 Appendix – Installation Instructions for ".deb" packages

Below are the instructions for installing Toshiba JavaPOS drivers on Linux distribution supporting ".deb" packages.

All commands must be run with root privileges.

```
sudo -i
```

Pre-requisites

Linux kernel source
development tool 'dpkg-dev'
java packages OpenJDK 8

How to include Linux kernel source in Ubuntu

Software & Updates Setup

1. Network needs to be connected
2. Download Server needs to be setup under System Setting option 'Software & updates'
3. System Setting option 'Software & updates'->ubuntu software-> Option source code 'Enabled'

6.1 Installing tools to facilitate the installation and compilation of drivers.

```
apt install openjdk-8-jre
```

6.2 Installation of deb file

```
apt install ./toshibaposs-gcc48_<version>_amd64.deb
apt install ./toshiba-javapos_<version>_amd64.deb
apt install ./javax-usb_1.0.2-2_amd64.deb
apt install ./javax-usb-ri_1.0.2-2_amd64.deb
apt install ./javax-usb-ri-linux_1.0.3-3_amd64.deb
apt install ./rxtx-2.2-1_amd64.deb
```

6.3 Uninstallation of deb files

```
apt purge toshiba-javapos
apt purge javax-usb
apt purge javax-usb-ri
apt purge javax-usb-ri-linux
apt purge rxtx
```

6.4 Compiling Toshiba POS Kernel-Mode Drivers

You may **skip** this section, if you don't need support for RS485 devices, PS/2 attached POS Keyboard

The JavaPOS drivers require kernel-mode drivers to support the system attached Keyboard, RS485 Devices, and Cash Drawer attached to the system. The kernel-mode driver source deb is included in the release package. The kernel drivers must be built and installed on the system.

Installing Linux Kernel sources and tools to compile

apt-get install linux-source -y
apt-get install gdebi-core
apt-get install make
apt-get install make-guile
apt install dkms
apt install linux-headers-generic

Install kernel mode driver rpm:

gdebi toshibaposs-kernel_<version>_amd64.deb

Build and install the kernel-mode driver after installing the rpm.

The rpm will extract the kernel-mode driver source into three directories.

- /usr/src/kernel-modules/toshiba/dcs
- /usr/src/kernel-modules/toshiba/kbd
- /usr/src/kernel-modules/toshiba/dkms

Run the follow command in the directory of the driver source

- cd /usr/src/kernel-modules/toshiba/dcs
- make (to compile drivers)
- make install (to install drivers)
- depmod –ae (this must be done to satisfy module dependency in modules. def file)

- cd /usr/src/kernel-modules/toshiba/kbd
- make (to compile drivers)
- make install (to install drivers)
- depmod –ae (this must be done to satisfy module dependency in modules. def file)

- cd /usr/src/kernel-modules/toshiba/dkms
- ./install_toshiba_driver.sh

The Toshiba kernel-mode drivers will be installed at the following location.

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

Driver Details:

Name	Description
aipdcs3.ko	The core driver for RS485 devices, like Cash Drawer, NVRAM, Printer, Display
aipbcd.ko	Cash Drawer driver for SP300
aipmtn.ko	Motion Sensor driver for AnyPlace Kiosk
aipikbps.ko	PS/2 keyboard driver for POS Keyboard
aipsocdkl.ko	SurePOS 100/SureOne: Cash Drawer and Keylock driver
aipsops.ko	SurePOS 100/SureOne: Keyboard driver

Add 'aipstart' service to auto start

Configuring auto-start services in Ubuntu is slightly different. Let us say the script name is 'aipstart'

- Login as a root
  - Sudo -i
  - 'aipstart' already in /etc/init.d/ folder
- Execute the below command
  - update-rc.d aipstart defaults

To view connected RS485/RS232 online even with default login – regular user <user>.
Add beller to the user's group

- sudo -i
- usermod -a -G users <user>

Reboot the system to ensure services are started.

6.5 Uninstall kernel-mode drivers

cd /usr/src/kernel-modules/toshiba/dkms
./uninstall_toshiba_driver.sh
apt purge toshibaposs-kernel

6.6 Using x86 JVM in Ubuntu

This section provides installation instructions for Toshiba JavaPOS on 64-bit Linux distributions, using a 32-bit Java Virtual Machine.

Install and configure x86 JVM

#dpkg --add-architecture i386
#apt-get update
#apt-get install openjdk-8-jre:i386
#update-alternatives --config java
#java -version

Installation of deb files

```
#apt install ./toshiba-javapos_1.14.6-1_all.deb
#apt install ./toshiba-javapos_libs-32bits_1.14.6-1_all.deb
#apt install ./toshibaposs-gcc43_11.5.0-1._all.deb
```

Trouble Shooting Section

If while installing the deb packages in your system, you encounter the next message error:
<package-name>: Depends: libgcc-s1 (>= 3.0) but it is not installable

Your system might be missing the libgcc-s1 library, to overcome this dependency please follow the next steps:

1) sudo add-apt-repository ppa:ubuntu-toolchain-r/test
   a. You'll be asked to hit enter to continue.
2) sudo apt-get update
3) sudo apt install gcc-10
4) sudo apt install ./<package_name>.deb

7.0 Appendix – Installation Instructions for ".rpm" packages

Below are the instructions for installing Toshiba JavaPOS drivers on Linux distribution supporting ".rpm" packages.

All commands must be run with root privilege

sudo -i

Download pre-requisite tools:

apt install openjdk-8-jre

SUSE SLE 15 (64-bit):

For SLE15, the libraries listed below are required. Libraries should be installed before the Toshiba JavaPOS driver. Please continue with the JavaPOS installation instructions once dependencies are fulfilled:

Additional software listed below, is required for SLE 15 and it should be available from SLE installation media:

rpm name: glibc-32bit-x.xx-x.x.x86_64.rpm

rpm name: libgcc_s1-32bit-xx.x.x+gitxxx-x.x.x86_64.rpm

rpm name: libstdc++6-32bit-xx.x.x+gitxxx-x.x.x86_64.rpm

rpm name: sblim-sfcb-x.x.x-x.x.x.x.x86_64.rpm
rpm name: sblim-wbemcli-x.x.x-x.x.x.x86_64.rpm

7.1 USB device support

Install the following rpms for **USB** device support.

- toshiba-javapos-<version>.x86_64.rpm (core rpm required for all device support)
- toshibaposs-gcc48-<version>.x86_64.rpm (core rpm required for all device support)
- javax-usb-1.0.2-1.x86_64.rpm
- javax-usb-ri-1.0.2-1.x86_64.rpm
- javax-usb-ri-linux-1.0.3-2.x86_64.rpm

7.2 RS232 device support

In addition to the rpms installed in section 7.1, install the following rpm for RS232 device support. For additional details, refer to readme.txt located at /opt/tgcs/javapos/rxtx, specifically the Programming Notes section.

- rxtx-2.2-pre2.03.x86_64.rpm

7.3 RS485, Embedded and PS2 keyboard device support

In addition to rpms installed in section 7.1, you must also build kernel drivers and install them. The instructions are provided in the following section.

POS kernel-mode drivers

You may **skip** this section, if you don't need support for RS485 devices, PS/2 attached POS Keyboard

The JavaPOS drivers require kernel-mode drivers to support the system attached Keyboard, RS485 Devices, and Cash Drawer attached to the system. The kernel-mode driver source rpm is included in the release package. The kernel drivers must be built and installed on the system.

SUSE SLE 12 (64-bit):

For SLE12, SUSE builds the kernel-mode drivers and publishes them on their support site for download at the link below:

link => https://drivers.suse.com/Toshiba/tgcs/pos/

rpm Name: toshiba-poss-suse12-kmp-default-*.x86_64.rpm

Extract source rpm:

To do this, cd into the "poss_kernel_drivers_other_linux" folder and install the following rpm.

toshibaposs-kernel-<version>.x86_64.rpm

The rpm will extract kernel mode driver source into 2 directories.

/usr/src/<kernel-version>kernel-modules/toshiba/dcs

/usr/src/<kernel-version>kernel-modules/toshiba/kbd

Build and Install Kernel-Mode Drivers:

Build and install drivers in the dcs directory:

```
cd /usr/src/<kernel-version>/kernel-modules/toshiba/dcs
make          (to compile drivers)
make install  (to install drivers)
depmod –ae    (this must be done to satisfy module dependency in modules. def file)
```

Build and install drivers in the kbd directory:

cd /usr/src/<kernel-version>/kernel-modules/toshiba/kbd
make (to compile drivers)
make install (to install drivers)
depmod –ae (this must be done to satisfy module dependency in modules. def file)

The Toshiba kernel mode drivers will be installed at the following location.

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

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

Driver Details:

Name	Description
aipdcs3.ko	The core driver for RS485 devices, like Cash Drawer, NVRAM, Printer, Display
aipbcd.ko	Cash Drawer driver for SP300
aipmtn.ko	Motion Sensor driver for AnyPlace Kiosk
aipikbps.ko	PS/2 keyboard driver for POS Keyboard
aipsocdkl.ko	SurePOS 100/SureOne: Cash Drawer and Keylock driver
aipsops.ko	SurePOS 100/SureOne: Keyboard driver

7.4 Reboot

Reboot the system. Once the system is rebooted, you should be able to configure the devices through JavaPOS POS Control Center described in the next section.

8.0 Appendix – Installation Instructions for System Management

Installation

The following packages are required, for Toshiba JavaPOS.
Packages rpm/deb are provided on the Toshiba Support site:
https://commerce.toshiba.com/wps/portal/marketing/?urile=wcm:path:/en-us/home/support/product-support/support-hardware/support-commonpackages-sitearea

- posibm_xml4c_5.7.1-1_all
- toshiba-upos-sblim-cmpi-upos-server-sled_<version>_<arch>

The following packages are required please obtain them from the Operating System Installation media:

- sblim-wbemcli
- sfcb

Configure SFCB

Edit /etc/sfcb/sfcb.cfg to allow http communication and authentication.
https lines must be commented (use: #) as follow:

```
httpPort:          5988
enableHttp:     true
httpProcs:       8
#httpsPort:      5989
#enableHttps:  true
#httpsProcs:    8
doBasicAuth:   false
```

Start SFCB server

/usr/sbin/sfcbd -d

You can validate the status of the SFCB server as follow

systemctl status sfcb

Validating System Management

To view the systems management properties for a device, the device must be opened and claimed.
Example to open/claim/enable a device in JavaPOS:

Start POS Control Center utility:

- Open a terminal window.
- Open POSControlCenter
- To configure devices, click on AutoDetect and save jpos.xml to the default location.
- Select an online device, and click on the “System Management” tab

- Click on “Start Statistics Test”. This will display the system management properties of the device, and it will also keep the device in open/claim/enable state.
- Get System Management properties for a given device by issuing the wbemcli command, for example for the POSPrinter device:
    - wbemcli ei http://localhost:5988/root/cimv2:UPOS_POSPrinter