

# PC/SC-lite USB CCID IFD Handler v1.3.1 Release Notes

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This distribution is a Sun Ray™ implementation of the Interface Device Handler (IFD) for CCID-compliant USB smart card readers for the PC/SC-lite API, derived from the Open Source MUSCLE project. When used in conjunction with PC/SC-lite, this IFD handler enables PC/SC-compliant applications and middleware to use external USB smart card readers on Solaris 10 servers and workstations and on Sun Ray thin client desktop units (DTUs).

PC/SC (Personal Computer/Smart Card) is the standard framework for smart card device access on Windows, Linux, and UNIX® platforms.

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## Supported Platforms

This IFD handler is designed to run on the following operating systems:

- Solaris 10 11/06 SPARC and x86 (or later)
- Solaris 10 11/06 SPARC and x86 with Trusted Extensions (or later)

Using the CCID IFD handler v1.3.1 on Sun Ray DTUs also requires:

- Sun Ray Server Software (SRSS) 4.0, patch -02 or later
- PC/SC-lite 1.1

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**Note** – The PC/SC-lite 1.1 framework must be installed before the CCID IFD handler is installed.

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# Supported Environments

The CCID IFD handler can be used in two environments:

- CCID reader[s] plugged directly into USB ports on a server or workstation (referred to here as a system)
- CCID reader[s] plugged into USB ports on a Sun Ray DTU (Desk Top Unit)

Some behavior differs slightly, primarily because session mobility does not apply to system sessions.

Any use of reader[s] on the server's ports is functionally the same, whether the user is logged into the console or logged in remotely.

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**Note** – A headless system, i.e. one without a console, is a valid non-Sun Ray configuration for PC/SC-lite with CCID support.

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# Installation

Follow these instructions to install the CCID IFD handler.

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**Note** – In a Solaris™ 10 11/06 SPARC environment, perform the installation as root. To install the CCID IFD handler in a Solaris Trusted Extensions environment, perform the installation as root from ADMIN\_LOW (global zone).

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**1. If you have not already done so, install the following PC/SC-lite packages:**

- SUNWpcsc
- SUNWpcscdtu (for Sun Ray implementations only)

PC/SC-lite instructions can be found in the *PC/SC-lite 1.1 Release Notes*.

**2. Download and unpack the CCID IFD handler.**

**3. Install the CCID IFD handler:**

```
# svcadm disable pcscd
# /usr/sbin/pkgadd -d . SUNWusb-scrdr
# svcadm enable pcscd
```

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# Uninstallation

Follow these instructions to remove the CCID IFD handler. Remove this package before removing the PC/SC-lite packages SUNWpcsc and SUNWpcscdtu.

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**Note** – In a Solaris 10 11/06 SPARC environment, perform the uninstallation as root. To uninstall the CCID IFD handler from a Solaris Trusted Extensions environment, perform the uninstallation as root from ADMIN\_LOW (global zone).

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- Uninstall the CCID IFD handler package:

```
# svcadm disable pcscd
# /usr/sbin/pkgrm SUNWusb-scrdr
# svcadm enable pcscd
```

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# Known Problems and Limitations

## System Session Issues

### PC/SC-lite USB Enumeration Delays

On systems (i.e., on workstations or servers), the delay in enumeration of USB readers is only a problem if the application does not wait for a reader to appear or if two or more readers are used. If this causes problems, work around them by running `startpcsc` before running the PC/SC-lite application. This causes an instance of `pcscd` to be created and the available USB readers to be enumerated.

If the PC/SC-lite framework is allowed to sit idle for too long, the system `pcscd` instance exits. This causes the same problem to recur. If the system instance needs to stay resident indefinitely, change `INSTANCE_TIMEOUT` in `/etc/smartcard/pcscd-Local.conf` to `-1` (the default value is 600 seconds). This causes the system instance to stay around until the user's session is terminated; however, an extra PC/SC-lite process remains in the process table, using system resources.

# Issues On Sun Ray DTUs

## Session Mobility, Resetting or Power-cycling the DTU Can Freeze Applications

Session mobility, resetting, or power-cycling the DTU while using an external smart card reader on that DTU is not supported in this release and can cause applications to freeze, or simply to lose track of the external reader.

## PC/SC-lite USB Enumeration Delays

Currently, there is a delay of a few seconds before external USB readers become visible to PC/SC-lite client applications. This delay occurs whenever a PC/SC-lite instance is started for a user session, whether on a Sun Ray DTU or in a system, as well as any other time the USB bus needs to be re-enumerated. Specifically, an enumeration delay where external USB readers are not immediately visible to an application occur under the following circumstances:

1. The first time a PC/SC-lite instance is started.

That is, when an application attempts to access PC/SC-lite from within a given session for the first time.

2. Whenever a PC/SC-lite instance is automatically restarted after the PC/SC-lite self-terminates due to an idle period of inactivity.

This is similar to the first case.

3. Whenever a Session Mobility event occurs, causing a delay in reader visibility while external USB readers on the target DTU are re-enumerated.

Session Mobility is not currently supported by the CCID IFD handler for external USB readers on Sun Rays DTUs.

4. Resetting or power-cycling the DTU in a Sun Ray session.

### *Enumeration Delay Causes Problems for Some Applications*

Certain applications, such as Windows Smart Card login over Sun Ray Windows Connector, are not designed to accommodate enumeration delays associated with the USB hotplug model. Such applications do not see readers that appear after they have initially scanned the PC/SC-lite reader list. In other words, readers that appear “late” may be missed by an application due to any of the scenarios described above.

Sometimes applications will use the first reader they find. On Sun Ray DTUs, this is invariably the internal reader, unless that reader has been disabled with the following command:

```
# utdevadm -d -s internal_smartcard_reader
```

The solution is to ensure that the USB reader list is visible to the application before the application scans the reader list. A way to address this problem within PC/SC-lite is planned for a subsequent update of PC/SC-lite. Meanwhile, the following workarounds allow applications to recognize readers that exhibit enumeration tardiness.

### *Workarounds for Hotplug-Unaware Applications*

#### **1. Run PC/SC-lite instance before PC/SC-lite client application**

Make sure that the session-specific PC/SC-lite instance is running for several seconds before starting the PC/SC-lite client application, rather than having PC/SC-lite started on behalf of the client application itself. This ensures that USB readers are all listed the first time the client application requests the reader list.

Run the application `startpcsc`, available as an SDLG download under `pcsc tools`. It calls `ScardEstablishContext()`, causing the `pcscd` launcher to ensure that a PC/SC-lite session instance is running, then waits long enough for the readers to be instantiated.

#### **2. Prevent PC/SC-lite instances from timing out after a pre-specified idle period**

Disable instance timeout by editing `/etc/smartcard/pcscd-SunRay.conf` and changing the `INSTANCE_TIMEOUT` parameter to `-1`. The shipping default value is 600 seconds (10 minutes).

When you disable inactivity timeouts by changing `INSTANCE_TIMEOUT`, PC/SC-lite instances stay around until the user's session is terminated, which can mean that many PC/SC-lite processes may be in the process table, using system resources.

We currently have no data on how much of an impact that might cause as the number of user sessions on a system grows (i.e., we have insufficient data on how that scales). In many cases, it may not be a problem at all, except that the process table will be more cluttered with inactive processes than otherwise.

### 3. Session Mobility

The most difficult situation to accommodate is re-enumeration and the enumeration delay associated with session mobility (hotdesking). This does not apply to system users, as only Sun Ray DTUs support session mobility.

Session mobility is not supported for USB readers on Sun Ray DTUs for this update of PC/SC-lite; however, it may be possible to find a workaround. For example, if an application is incapable of handling readers that appear suddenly, then session mobility is likely to confuse the application, since session mobility simulates USB hotplug events with the USB smart card readers.

Workarounds for this probably involve re-starting the application after session mobility, and probably applying the instructions described in [Step 1](#) above.

### 4. Disable the internal reader

If you only need the external reader, and not the internal reader — for instance, when users are not identified by their cards and a more functional reader, such as a PIN pad equipped reader is needed — use the following command to disable the internal reader:.

```
# utdevadm -d -s internal_smartcard_reader
```