

# Verifone Windows USB Driver

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[www.verifone.com](http://www.verifone.com)

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Verifone, Inc.  
817 Broadway, Suite 1100  
New York, NY 10003 USA

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## Revision History

Revision	Date	Driver Version	Author	Description
1.0	10/23/2024	5.0.5.2-B7	MichaelT11	Initial release of new format along with 5.0.5.2-B7.

## Table of Contents

1. Introduction	6
1.1 About This Document	6
1.2 Abbreviations/Definitions	7
2. Overview	8
2.1 Features	8
2.2 Supported POS Platforms	8
2.3 Supported Verifone Products	8
3. Release Information	10
3.1 5.0.5.2-B7	10
3.2 5.0.5.2-B6	10
3.3 5.0.5.2-B5	11
3.4 5.0.5.2-B4	11
3.5 5.0.5.2-B3	12
3.6 5.0.5.2-B2	12
4. Product-Specific Details	13
4.1 Native USB-to-USB Connections	13
4.2 USB-to-UART Connections	13
5. Installation	17
5.1 Prerequisites	17
5.2 Installation Process	19
6. RNDIS Configuration	23

6.1 Payment Device Configuration	23
6.2 Windows 10 and 11 Configuration	25
6.3 Verify RNDIS Configuration	29

## 7. Logging 31

7.1 Installation	31
7.2 Driver	31

## 8. Troubleshooting 32

8.1 Installation Issues	32
8.2 Operational Issues	33

# 1. Introduction

## 1.1 About This Document

This User Guide document contains information about the Verifone Windows USB Driver and associated tools along with their application in Point of Sale solutions. It has been updated for the 2024 portfolio of Verifone products and supported environments. For legacy information, refer to the past driver releases which contain legacy release notes.

This information is included in this document:

- Driver changes or enhancements
- Driver issues or defects fixed
- Known issues (driver or environmental)
- Best practices



## 1.2 Abbreviations/Definitions

Item	Definition
IP Over USB	A Windows PC configuration where the Verifone payment device is physically connected via USB but is configured with an IP address and can send and receive data over TCP/IP to applications running on the PC, optionally including sharing the PC's main internet connection
PCI	Payment Card Industry
PID	Product Identification. Identifies the USB product (this value is vendor defined)
POS	Point of Sale. Refers to the PC and Point of Sale application running on it that communicate with the Verifone payment device to accept payments.
RNDIS	Remote Network Device Interface Specification. Microsoft provides an RNDIS driver to enable IP over USB communication with devices that support RNDIS protocol.
SOC	System on a Chip. Refers to the application processor in the Verifone payment device.
UART	Universal Asynchronous Receive Transmit. In these products, refers to the serial link comprised of Rx/Tx/RTS/CTS.
URB	USB Request Block
USB	Universal Serial Bus
VID	Vendor Identification. Identifies the vendor of the USB Device (this value is managed by the USB-IF organization)

## 2. Overview

The Verifone Windows USB Driver consists of a proprietary USB serial driver as well as an inf file to enable the Microsoft Windows RNDIS driver to load against Verifone products which support RNDIS/IP over USB. The RNDIS driver is provided by Microsoft, and the serial component of the Verifone Windows USB Driver operates as part of the Microsoft Windows USB driver stack which includes several Microsoft driver components. As such, it is recommended to keep the POS PC updated regularly with Windows Updates.

### 2.1 Features

The Verifone Windows USB Driver provides the following unique features compared to the standard Windows USB Serial driver:

- COM port affinity: Allows the Verifone payment device to be installed on a consistent COM port (default: COM9) for ease of POS software integration across an estate.
- Virtual COM port: Creates a virtual COM port that the POS software connects to. This allows the connection to be retained when the Verifone payment device is disconnected (for example, during the PCI 24hr reboot or when rebooting after software installations).
- Friendly device naming: Clarifies which device in Device Manager is a Verifone product. Applies to both COM devices under Ports and RNDIS adapters under Network adapters.
- Serial logging: Optional (default: off) capability for logging Verifone USB serial activity to a log file. Useful for troubleshooting activities.

### 2.2 Supported POS Platforms

- Windows 11 (x86 64b)
- Windows 10 (x86 32/64b)

Refer to the legacy releases for details on legacy/end-of-support OSes.

### 2.3 Supported Verifone Products

Supported product families are listed below. The list of products is intended to show the product/family mapping and is not exhaustive.

- Verifone New Common Platform (Android or VOS3)



- Same products as Verifone Common Platform, but -A skus
- Verifone Common Platform (Android or VOS3)
  - Ex: V640m, P630, M425, M450, V660p, UX700ML
- Verifone Android
  - Ex: T650(m/c/p), M424, M440
- Verifone Engage
  - Ex: e235, e280(s), e285, V400c, V200c, V205c, P400, P200, M400, V400m, V240m, V210, V200t
- Verifone VOS
  - Ex: UX 100, 300, 301, 410
- Verifone Legacy Products
  - Ex: Mx915, Mx925, e355
- Verifone Full Featured Bases

## 3. Release Information

### 3.1 5.0.5.2-B7

#### 3.1.1 Notes

- ECO C77324; Oct 23, 2024
- This version is the minimum required to support Verifone New Common Platform products

#### 3.1.2 Key Changes

- Added support for vendor unique commands to configure the USB UART parameters (baud rate, etc.) on Verifone New Common Platform products (-A skus)
- Reference batch files updated to default Base Support to Yes
- Updated Windows USB Driver User Guide to new format

#### 3.1.3 Known Issues

- When upgrading from a different driver version (ex: 5.0.5.2-B6 to 5.0.5.2-B7), if the installation is done with no payment device connected on USB and then a Verifone Common Platform product is plugged in (USB UART device – see USB-to-UART Connections below for details), the device will enumerate with a yellow bang and error code 39. To resolve this issue, plug in a different Verifone payment device, remove it, and then plug the Verifone Common Platform product back in. This issue is not seen if the payment device is plugged in during the driver installation.

### 3.2 5.0.5.2-B6

#### 3.2.1 Notes

- ECO C76446; Feb 16, 2024
- This version is the minimum required to support Verifone Common Platform products

#### 3.2.2 Key Changes

- Added support for GET\_LINE\_CODING and SET\_LINE\_CODING commands for Verifone Common Platform products (V640m, P630, M425, M450, V660p, UX700ML)

### 3.2.3 Known Issues

- None

## 3.3 5.0.5.2-B5

### 3.3.1 Notes

- ECO C75133; July 13, 2023

### 3.3.2 Key Changes

- Added support for Full Featured Bases
- Added support for the Android product family
- Updated the signing certificate to an EV Code Signing certificate
- Added a registry key to show the specific driver version installed

### 3.3.3 Known Issues

- None

## 3.4 5.0.5.2-B4

### 3.4.1 Notes

- ECO C72689; Aug 7, 2022

### 3.4.2 Key Changes

- No functional changes. Provided a Windows 11-specific build due to new Microsoft signing requirements.

### 3.4.3 Known Issues

- There are separate directories for Windows 11 and Other Windows installs so the user must choose the correct installation source based on their POS OS.

## 3.5 5.0.5.2-B3

### 3.5.1 Notes

- ECO C65072; Oct 18, 2019

### 3.5.2 Key Changes

- No functional changes. Driver was re-signed by Microsoft following new driver signing guidelines.

### 3.5.3 Known Issues

- None

## 3.6 5.0.5.2-B2

### 3.6.1 Notes

- ECO C63298; Feb 12, 2019

### 3.6.2 Key Changes

- Fixed a scenario where the second application's attempt to connect while the first application holds the COM port leads to communication failures
- Updated the details about a Microsoft hotfix to be applied to the POSReady 7 OS to resolve an RNDIS 6.0 connection issue

### 3.6.3 Known Issues

- None

## 4. Product-Specific Details

### 4.1 Native USB-to-USB Connections

The following product families use an SOC that has multiple USB controllers so the USB Device exposed is a native USB controller. This means that the serial connection between the POS PC and the payment device is a pure USB connection running at standard USB speeds (typically 480Mb for USB High Speed). As such, the serial connection parameters like baud rate, parity, stop bits, etc. are immaterial and their values when opening the connection have no bearing on link functionality. In addition, a native USB controller is required for RNDIS/IP over USB support so these products can support IP over USB (if properly configured).

- Verifone Android
- Verifone Engage
- Verifone VOS
- Verifone Legacy Products

### 4.2 USB-to-UART Connections

The following product families use an SOC that has a single USB controller. By default, this controller is configured for USB Host mode to enable their I/O dongles to provide features like Ethernet or USB type A female connectors for USB storage devices. To support USB Device connectivity, a USB-to-UART adapter is implemented in the design. This exposes a USB Full Speed Device to the POS PC, and between this adapter and the SOC is a UART interface. In this case, the serial connection parameters (baud rate, etc.) do matter and both sides of the UART interface must be configured with matching parameters. Because the data is flowing across a UART interface which is much slower than a typical native USB-to-USB connection, large transfers will be significantly slower.

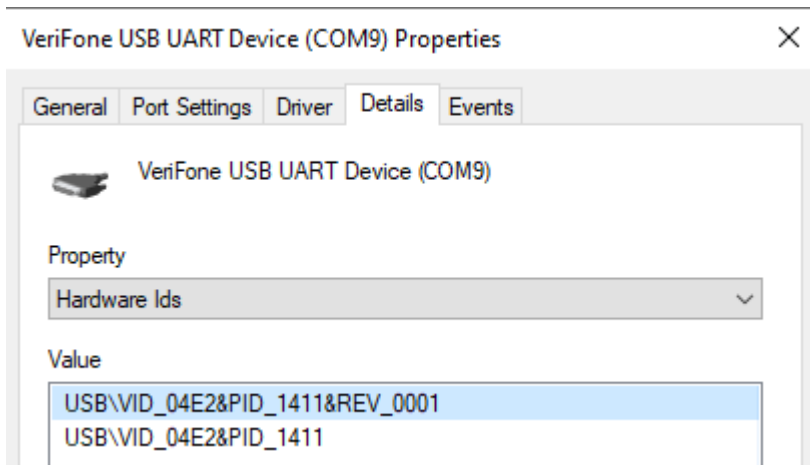
- Verifone New Common Platform (Android or VOS3)
  - Requires driver version 5.0.5.2-B7 or newer
  - It is highly recommended to enable HW flow control (RTS/CTS) on the connection
  - Maximum baud rate is 4000000
  - Supported serial configuration is 8/N/1 (8 data bits, no stop bit, 1 parity bit)
- Verifone Common Platform (Android or VOS3)
  - Requires driver version 5.0.5.2-B6 or newer
  - Requires Base Support = Yes during installation
  - Requires HW flow control be enabled (RTS/CTS) on the connection

- Maximum baud rate is 1500000
  - Supported serial configuration is 8/N/1 (8 data bits, no stop bit, 1 parity bit)
- Verifone Full Featured Bases
  - Note: Requires driver version 5.0.5.2-B5 or newer
  - Note: Requires Base Support = Yes during installation
  - Supported serial configuration is 8/N/1 (8 data bits, no stop bit, 1 parity bit)

An example of a product in this configuration would be as follows:

- M450 (M390-060-12-WWA-6) in USB Host mode
- Orange cable (CBL445-031-0x-A)
- Orange D2 dongle (445-114-01-A)
- RJ45-to-USBA cable (CBL132-002-0x-A)

These USB-to-UART connections can be identified by the VID/PID or 04E2/1411 in Device Manager.



## 4.2.1 Alternative Configuration

For use cases with Verifone Common Platform or Verifone New Common Platform devices that require RNDIS/IP over USB, or require USB Serial but do not require Ethernet, or require fast Serial, there are alternative cables and configurations that can be used to route out the native USB connection on the SOC to the POS PC. The payment device must be configured in USB Device mode in this case.

An example of a product in this configuration would be as follows:

- M450 (M390-060-12-WWA-6) in USB Device mode
- Blue cable (CBL445-024-0x-A)



Certain products like P630 have a single USB Device output which is connected to either the native SOC USB controller or the USB-to-UART chip. Selection of this routing is managed in software (USB Role (Enable device Mode)) so no cable change is required.

## 4.2.2 Device Manager Enumeration

The Verifone payment device will enumerate under Device Manager with different name strings depending on the device model and configuration. Configurations include:

- Serial: The USB serial interface is enabled
- Ethernet: The RNDIS IP over USB interface is enabled
- Composite: Both USB serial and RNDIS interfaces are enabled

Product Family	Config	VID	PID	Serial Friendly Name (under <i>Ports</i> )	RNDIS Friendly Name (under <i>Network adapters</i> )
VOS	Serial	11CA	0201	Mx Family POS Terminal	
Engage	Serial	11CA	0300	Verifone V,P Family USB UART device	
Android (USBD <sup>2</sup> )	Serial	11CA	0301	Android Family POS Terminal	
Android (USBH)	Multiple Serial	11CA	0302	Android Family POS Terminal	
VOS Engage VCP (USBD) VNCP (USBD)	Composite	11CA	AAAA	Mx Family POS Terminal	Verifone RNDIS 6.0 # <i>n</i>
Full Featured Base VCP (USBH <sup>4</sup> )		04E2	1411	VeriFone USB UART Device	
VNCP (USBH)		11CA	030A	VeriFone USB UART Device	

<sup>1</sup> VCP = Verifone Common Platform

<sup>2</sup> USBD = USB Device Mode

<sup>3</sup> VNCP = Verifone New Common Platform

<sup>4</sup> USBH = USB Host Mode

<sup>5</sup> (#*n*): The first RNDIS device to enumerate after driver install will be “Verifone RNDIS 6.0”. Subsequent unique RNDIS devices connected to the PC will enumerate incrementally (ex: “Verifone RNDIS 6.0 #1”).

**Note:** If the payment device enumerates as “USB Serial Device” it is enumerating with the default Windows USB serial driver. Reinstall the Verifone Windows USB Driver if this occurs.

# 5. Installation

## 5.1 Prerequisites

### 5.1.1 Windows Update

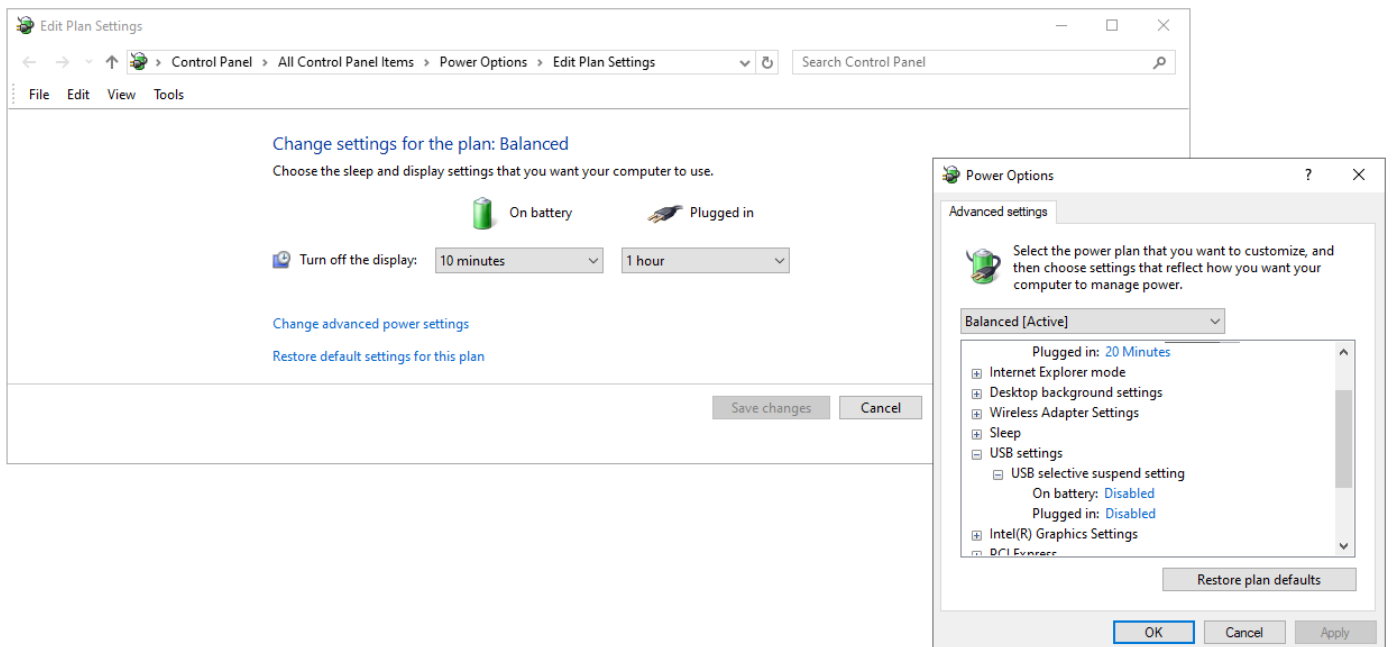
It is recommended to run Windows Update, if possible, to ensure the latest low-level Windows USB driver components are present. This can help resolve issues with newer PC hardware.

### 5.1.2 Disable USB Power Management

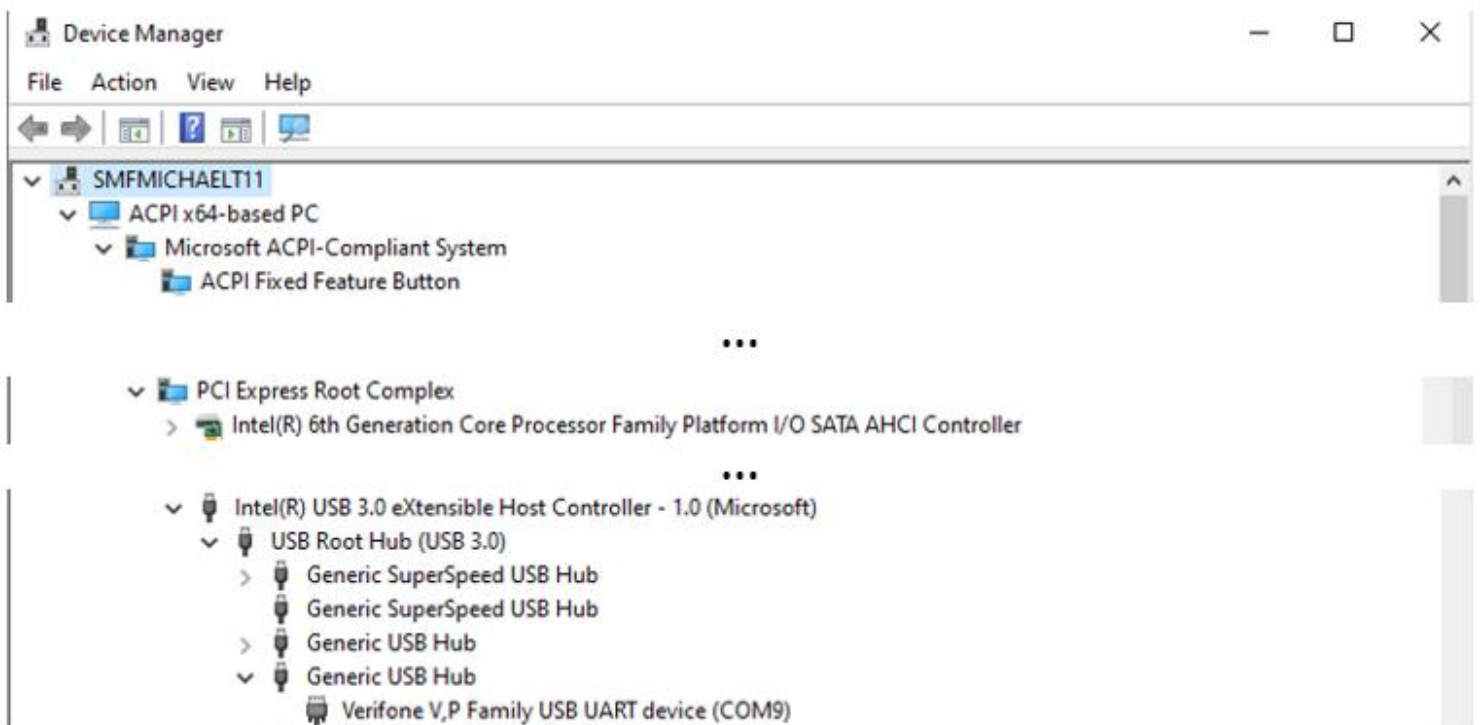
Certain PCs, depending on hardware used and how the BIOS and OS configure the PC, may allow USB power management functionality that can power down USB hubs and break communication with the payment device. It is recommended to disable this functionality. Some of these options may not be available depending on the specific model of PC and OS.

Windows 10:

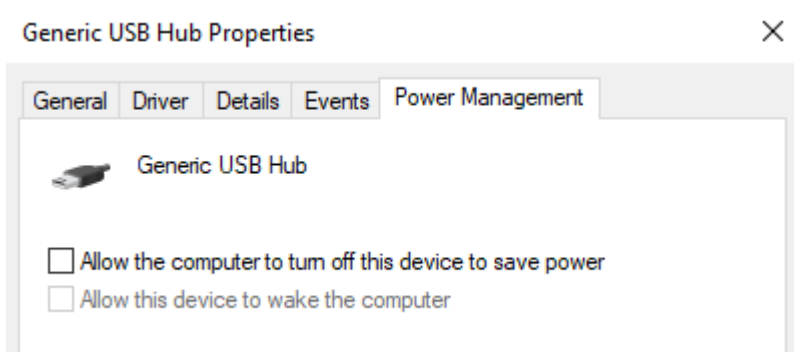
- *Start / Control Panel / Power Options / Change plan settings / Change advanced power settings*
  - Drill down to *USB settings / USB selective suspend setting* and set all options to *Disabled* (may show *On battery* and *Plugged in* or just *Setting* depending on the PC model)



- *Start / Device Manager*
  - Select *View Devices by Connection*
  - Drill down to the Verifone payment device (this will vary based on PC HW, but typically will be similar to: *ACPI x64-based PC / Microsoft ACPI-Compliant System / PCI Express Root Complex / Intel (or other) USB Host Controller / USB Root Hub / ... / (Verifone payment device)*).



- For each USB Hub in that hierarchy, right-click and select *Properties*, go to the *Power Management* tab, and uncheck *Allow this computer to turn off this device to save power*



Windows 11:

- It's easiest to click on *Start*, type "power" and then select *Edit a power plan*. Click *Change advanced power settings* and then disable USB Selective Suspend as described in the Windows 10 instructions.
- The same steps as for Windows 10 can be taken to disable *Allow this computer to turn off this device to save power*.

## 5.2 Installation Process

It is recommended to uninstall the current version of the driver before installing the new one. This can be done via *Add or remove programs* but is best accomplished with the provided batch files. Refer to the Batch File Install section below.

Initiate installation from the appropriate directory based on POS PC architecture (32 for 32b OSes, 64 for 64b OSes). Most installations today utilize 64b OSes.


### 5.2.1 UI Install

Double-click or right-click and select *Install* on *VerifoneUnifiedDriverInstaller64.msi*. Adjust the default configuration details as desired and click *Next*.

- Port root name: Allows changing the device name from COMn to any other root name (ex: XYZn).
- Port Number base: Sets the desired static port number.
- Single device system: When checked, only a single Verifone payment device will enumerate successfully, and a second one will be "yellow banded" in device manager with a Code 31 (Object name already exists). When unchecked, additional Verifone payment devices will enumerate but with incrementing COM port numbers based on what is available in the system.
  - Verifone Android devices configured for internal development will expose an ADB interface. To be able to utilize the Verifone Windows USB Driver concurrently with ADB, Single device system should be unchecked. This is for internal development only and has no impact on production units.

### Selecting the serial port name and number

Select the serial port name and number



Port root name:

Port Number base:

☒ Single device system

Note: If a COM port in the drop-down list is marked as "in use", it means that the port is either currently being used or had been previously assigned to a device. Only select a port that is "in use" if you know the associated device is no longer using it.

Select 'Single device system' if you will only ever have one device connected.

Port Root Name allows you to specify a different name for for the port than 'COM'. This averts any dashes with ports named 'COM'. Note, an 'in use' number only relates to ports named 'COM'.

InstallShield

< Back

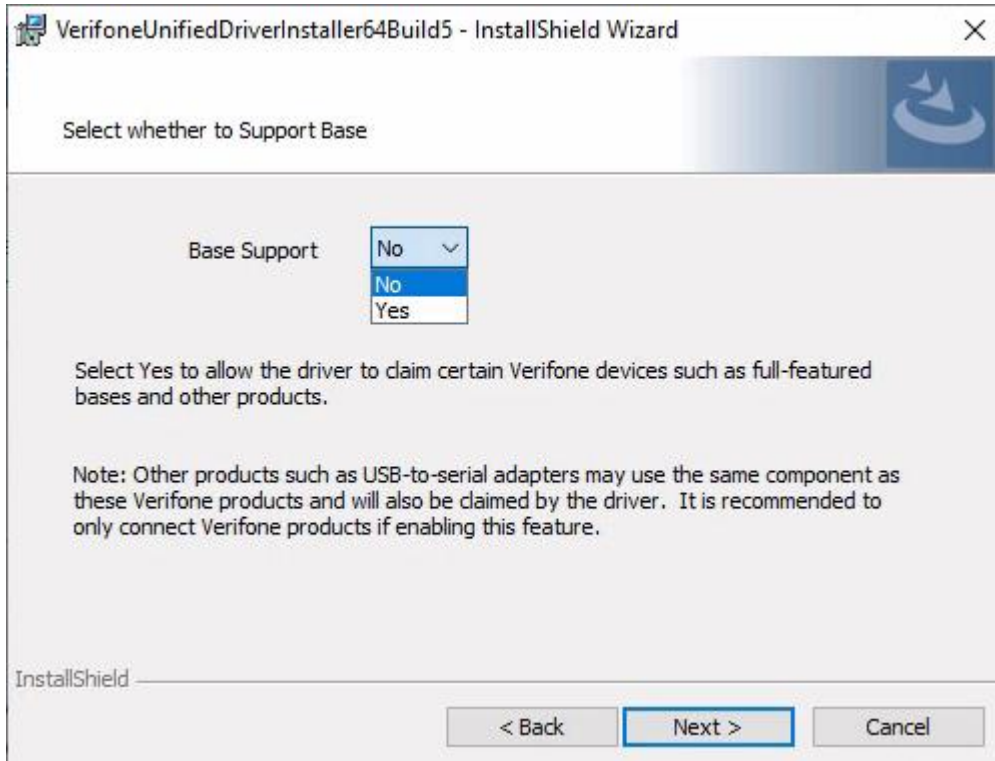
Next >

Cancel

Driver versions 5.0.5.2-B5 and later provide optional support for Verifone Full Featured Bases and newer payment devices that utilize a USB-to-UART adapter. To allow the Verifone Windows USB Driver to claim these devices, select Base Support = Yes. Refer to 4.2the earlier USB-to-UART Connections section for more details.

**Note:** Other USB devices such as USB-to-Serial cables may use the same USB-to-UART chip. If these devices are installed in the POS PC, the Verifone Windows USB Driver will attempt to claim them. This could cause conflict or unexpected behavior if such devices are present and if native drivers for these devices are installed (specifically, MaxLinear USB-to-UART drivers).





## 5.2.2 Batch File Install

Batch file installation is commonly used and allows for silent installation of the driver with the required settings. This enables installation across an estate of POS PCs without intervention of store personnel and ensures consistency in configuration. Verifone provides a reference batch file (silent\_install\_VerifoneUSBDriverUninstall.bat) which takes care of uninstallation and cleanup of the previous driver plus installation of the new one. This process is highly recommended to ensure a clean install of the new driver.

**Note:** Batch files must be run as Administrator.

The following configuration options must be supplied in the batch file:

- PORT\_ROOT\_LINK\_NAME=ABC: Same as “Port root name” from UI Install. Specify a custom symbolic link name or ‘COM’. Must be three letters long.
- PORT=7: Same as “Port Number base” from UI Install. Sets the desired static port number.
- SINGLE\_DEVICE\_SYSTEM=7: Same as “Single device system” from UI Install. Specify whether the system will have one or many devices attached. 1 for one, 0 for many.

- BASE\_SUPPORT=Yes/No: Same as “Base support” from UI Install. Specify whether Full Featured Bases and payment devices with USB-to-UART adapters will be supported or not.

The following configuration options are optional:

- FILE\_LOGGING\_OFF=0/1: Enables (0) or disables (1) Verifone Windows USB Driver logging
- IGNOREHWSERNUM=0/1: For devices with RNDIS enabled, setting this parameter to 1 will allow a different payment device of the same model with the same configuration plugged into the same USB port on the PC to use the same RNDIS device in Device Manager.
  - The use case is for payment device replacement (like for like) such that the RNDIS adapter will not need to be reconfigured and shared. Note that this is a Windows feature and if the new payment device is plugged into a different USB port or is a different model or not configured identically, a new RNDIS adapter is created and will need to be configured.

## 6. RNDIS Configuration

### 6.1 Payment Device Configuration

The following sections describe manual setup of the RNDIS/IP over USB connection on various payment devices. Some details may change depending on installed device software versions. This configuration can be set up via downloadable configuration packages. Please contact your regional Verifone representative for these packages.

#### 6.1.1 Verifone Engage

First, confirm the payment device is in USB Device mode (if applicable):

- 1-5-9 (twice) to enter Sysmode
- Log in as Administrator
- *Administration/Communications / MiniUSB* (if this is not present, no setting change is required)
- Set to *Device*

Next, ensure RNDIS is enabled:

- In Sysmode, navigate to *Administration / Communications/USB Gadget Settings*
- Set *USB Gadget* as follows:
  - Set *USB Gadget* to Composite to have both serial and RNDIS interfaces available
  - Set *USB Gadget* to Ethernet to have just RNDIS available
- Set *USB Network Protocol* to *RNDIS*
- Exit Sysmode (a reboot may be required)
- Note: This mode can also be configured in CCP (Com Control Panel)
  - 1-5-9 (once) to open ADK-MAC
  - Select *Com Control*
  - Scroll down to *More* and select it
  - Select *Configuration*, then enter the password (default is 200331)
  - Select *Network Interface / USB / USB Client Mode*
  - Select *Serial + Ethernet (RNDIS)* or *Ethernet (RNDIS)* as desired and press OK to save the settings

Next, configure the IP addresses:

- 1-5-9 (once) to open ADK-MAC

- Select *Com Control*
- Select *USB ETH[1] Client*, then *Configuration*, then enter the password (default is 200331)
- Select *IPv4*
- Set *DHCP* to *No*, then set the newly revealed fields as follows:
  - *IP Address*: 192.168.137.002
  - *Subnet Mask*: 255.255.255.000
  - *Gateway*: 192.168.137.001
  - *DNS 1*: 008.008.008.008
  - *DNS 2*: 008.008.004.004
  - (Note: The specific DNS servers to use may depend on IT infrastructure details – this is just an example.)
- Back out from that menu and select *Save*, then press *OK*
- When prompted to *Apply settings on interface?* select *Yes*. (The payment device must be plugged into the POS PC for this step to succeed.)

## 6.1.2 Verifone Android

- Swipe down from the top of the screen on the home screen and select the gear icon for *Settings*
  - On some products this may require a second swipe down to reveal the icon
- Select *Network & Internet, Advanced options*
- If there is an option for *USB Role (Enable device Mode)*, ensure it is set *On*
- Select *IP over USB*
- The *IP over USB mode* should default to *RNDIS*, but if not, set it as such
- The IP details should match those as described in the Engage section above. If not, select *Reset to Defaults*, then *OK*.
  - Some versions of Android allow changes to these settings. To make changes, select the gear icon in the upper right of the *IP over USB* screen, make the necessary changes, and select *Save*.

## 6.1.3 Verifone Common Platform, Verifone New Common Platform – Android OS

Ensure a proper cabling solution is being used for these products. Refer to Alternative Configuration in the earlier section on Product-Specific Details.

Refer to the configuration instructions in the Verifone Android section above.

## 6.1.4 Verifone Common Platform, Verifone New Common Platform – VOS3

Ensure a proper cabling solution is being used for these products. Refer to Alternative Configuration in the earlier section on Product-Specific Details.

- 1-5-9 to open the ADK-MAC screen
- Select *Control Panel / COM Control / More / Configuration / Device Settings*
- Ensure *USB1 Mode* is set to *Device*
- Click the back arrow in the upper left to get to the Configuration screen and select *Network Interface / USB*
- Under *USB Client Mode*, select *Serial + Ethernet (RNDIS)* or *Ethernet (RNDIS)* as desired and press OK to save the settings
- Select *ETH[1] Client settings / IPv4* and configure as described in the Verifone Engage section above. These fields may be prepopulated.

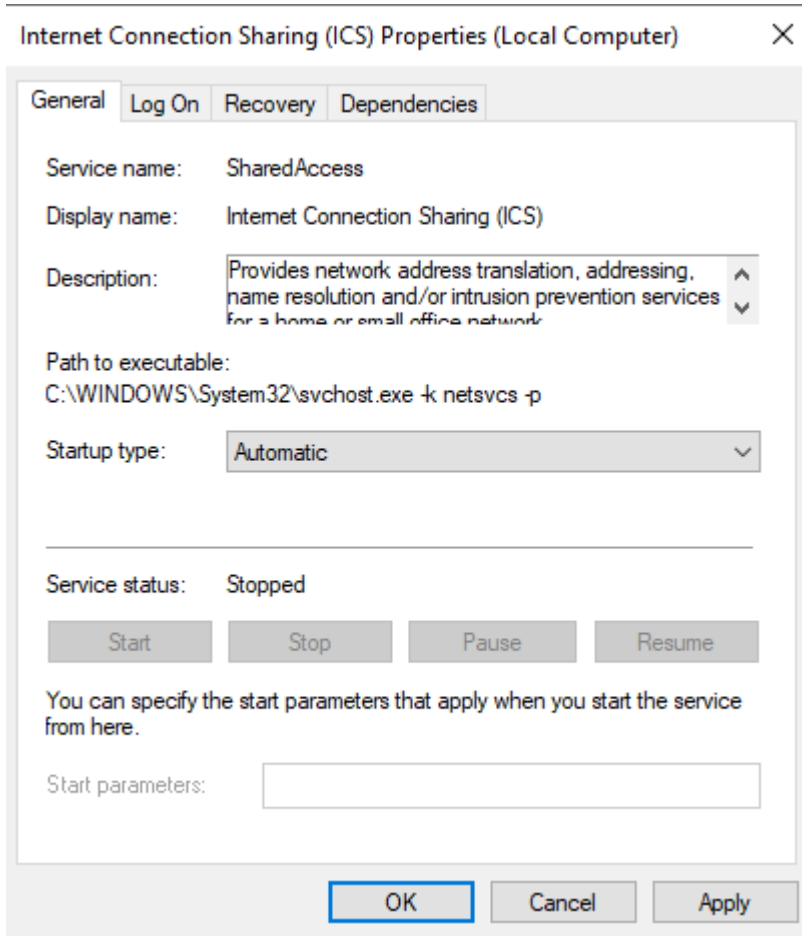
## 6.2 Windows 10 and 11 Configuration

The following sections describe manual setup of the RNDIS/IP over USB connection in Windows and assume a connected and configured payment device. The same steps can be accomplished using PowerShell scripts or with 3<sup>rd</sup> party software. Automation of this configuration via these means are highly dependent on the IT infrastructure of the POS estate, so implementation of such automation is up to the individual customer.

**Note:** Installing the Verifone Windows USB Driver requires that the previous version of the driver be uninstalled first, and this removes the RNDIS adapter and its configuration. So, if a POS PC is properly configured for RNDIS/IP over USB operation and the driver is updated, the RNDIS configuration will need to be reapplied to the POS PC.

### 6.2.1 Configure ICS for Automatic Startup

Open *Services*, right-click *Internet Connection Sharing (ICS)*, select *Properties*, and set the *Startup type* to *Automatic*.



**Note:** Some payment devices, such as P630 Android devices, take a long time to boot fully. For use cases where the POS PC and payment device may be powered up at the same time, configuring ICS for Automatic (Delayed Start) can avoid a known issue where if ICS starts before the payment device is connected or fully initialized, the outbound connection sharing will not work. See the RNDIS Issues under the Troubleshooting section for further details.

## 6.2.2 Configure Registry Settings

The following step is required for Windows 10 and may be required for Windows 11. Refer to [this article](#) for details. The symptom is that when ICS is configured to start automatically, in some cases after a reboot it will not start. The fix is to set a registry setting as follows:



Path: HKEY\_LOCAL\_MACHINE\Software\Microsoft\Windows\CurrentVersion\SharedAccess  
Type: DWORD  
Setting: EnableRebootPersistConnection  
Value: 1

Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\SharedAccess			
	Name	Type	Data
	(Default)	REG_SZ	(value not set)
	EnableRebootPersistConnection	REG_DWORD	0x00000001 (1)
	PrivateIndex	REG_DWORD	0x0000000d (13)
	PublicIndex	REG_DWORD	0x00000004 (4)

### 6.2.3 Configure IP Addresses

- Select *Start* and type “View net” and open *View Network Connections*.
- Right-click the Ethernet adapter corresponding to the Verifone RNDIS #*n* device and choose *Properties*.
- Select *Internet Protocol Version 4 (TCP/IPv4)* and click *Properties*

- Update the settings as follows and click *OK*. The specific DNS servers to use may depend on IT infrastructure details – this is just an example.

Internet Protocol Version 4 (TCP/IPv4) Properties ✕

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 192 . 168 . 137 . 1

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 8 . 8 . 8 . 8

Alternate DNS server: 8 . 8 . 4 . 4

☐ Validate settings upon exit

Advanced...

OK Cancel

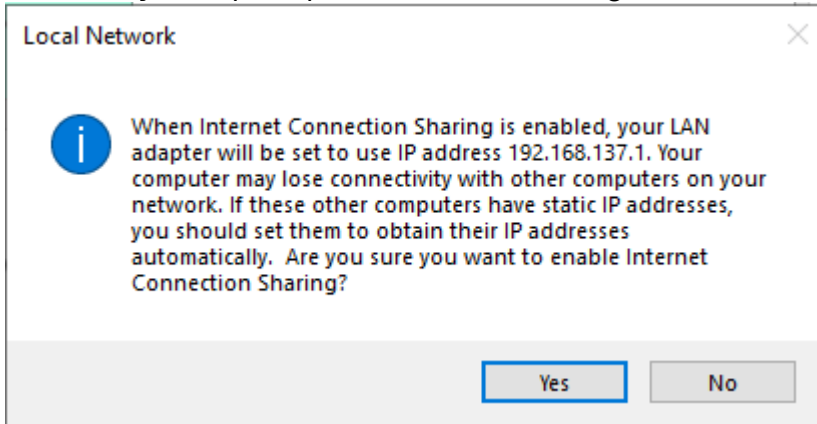
At this point, the local subnet will be set up and the payment device and POS PC should be able to ping each other. (There may be some restrictions on this depending on PC/IT setup.)

## 6.2.4 Share Main Internet Connection

To allow the payment device to share the main internet connection of the POS PC:

- Go back to *View Network Connections* and right-click the Ethernet adapter corresponding to the main internet connection (may be Ethernet or Wi-Fi) and select *Properties*.
- Select the *Sharing* tab, check the box next to *Allow other network users to connect through this computer's Internet connection*, choose the Ethernet adapter corresponding to the Verifone RNDIS #*n* device, then click *OK*.

- There may be a prompt to allow this sharing as below. Click *Yes*.



At this point, the outbound internet connection should be accessible to the payment device.

## 6.3 Verify RNDIS Configuration

### 6.3.1 PC to Payment Device

On the PC, open a command prompt and run *ping 192.168.137.2*. If the ping responses occur, this direction of the connection is working.

Alternatively, if there is POS software configured for IP over USB and a corresponding payment application on the payment device configured as well, then a functional payment request can be attempted.

### 6.3.2 Payment Device to PC

Some payment devices (Engage, VOS3) have a diagnostic function that allows pings to be performed. To do this, perform the following steps:

- 1-5-9 to open the ADK-MAC screen
- Select *Control Panel / COM Control / More / Diagnostic / Ping*
- Type in 192.168.137.001 and select *Continuous* or *Single*
- If responses occur, this direction of the connection is working

**Note:** Some PCs and PC configurations may block inbound pings so this test will fail, even though the connection is active and functional. Consult your IT department for help.

### 6.3.3 Payment Device to Internet

Payment devices that support the ping diagnostic can be used to check proper outbound routing of the network connection through the POS PC's primary internet connection by simply pinging a known public IP address, such as 8.8.8.8. Follow the same instructions as above.

Certain devices such as Android will indicate connection status via icons in the status bar (<-> on the right side means a successful connection, <->! means unsuccessful connection). By swiping down from the top, notification messages showing details of VHQ heartbeats or notification that the connection is not active will be present. Consult your specific device documentation for further details.

# 7. Logging

## 7.1 Installation

An installation log is written to C:\Program Files (x86)\VeriFone\VeriFone USB Driver Installer\log.txt. This will show installation parameters supplied and results of the install.

Details of the installation are also written to the registry at Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\VeriFone Inc\VeriFone USB Driver Installer\Setup. This will include the configuration parameters used during installation.

## 7.2 Driver

The Verifone Windows USB Driver provides the capability of logging serial device activity. RNDIS logging is not supported as that driver is provided by Microsoft. Serial logging is off by default.

Logging can be enabled either by setting FILE\_LOGGING\_OFF=0 during batch file installation or by editing the registry as follows:

Computer\HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\VFIUNIUSB

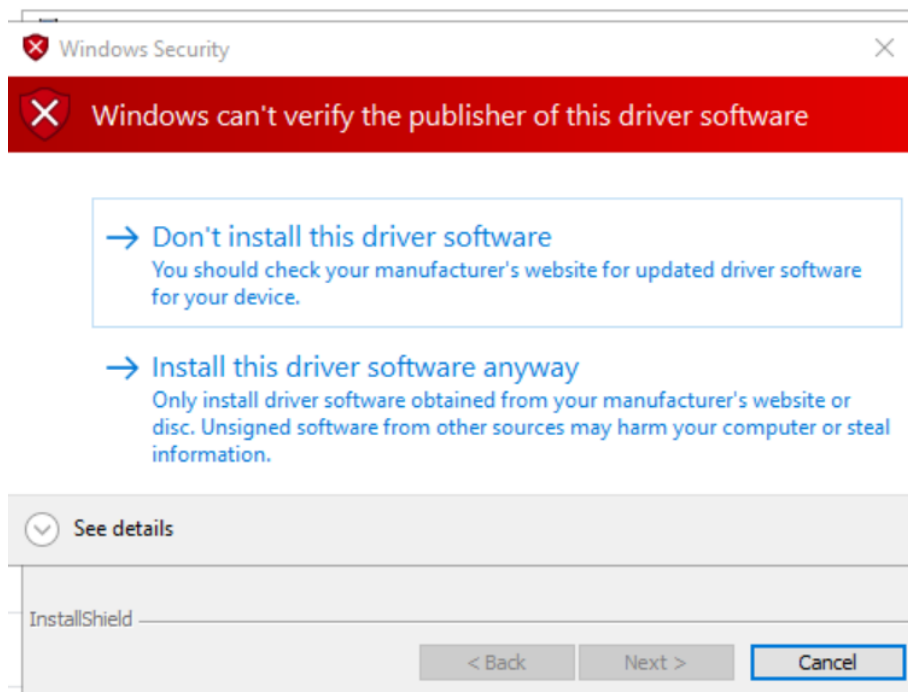
- FileLoggingOff:
  - Set to 0 to Enable logging
  - Set to 1 (or other non-zero value) to Disable logging
- MaximumLogFileSizeInKB: Defaults to 0x00007800 which is 30720 and the value is in KB so this is 30MB. This value can be increased as needed with caution about the amount of filesystem space it will use up.

The logs are stored in C:\Windows as VfiUniUSB0.log and VfiUniUSB1.log and they operate in a ping-pong fashion. When the current file has reached its maximum configured size, the opposite file will be deleted, and logging will start writing to the opposite file.

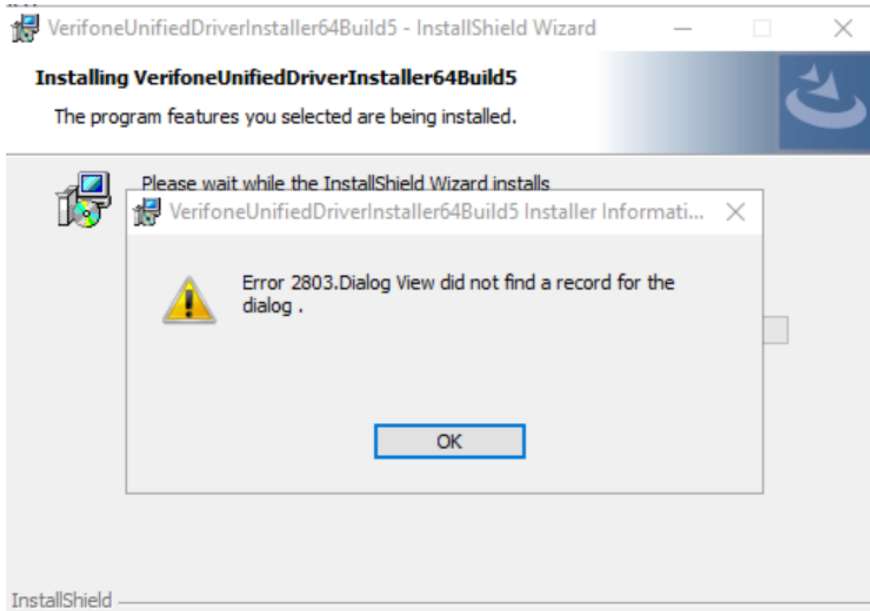
# 8. Troubleshooting

## 8.1 Installation Issues

Depending on the currently installed version of the driver and/or the Windows configuration, the following errors may occur. Performing a full uninstall as well as running the VfiCleanup.exe utility can help resolve these issues. Verify that uninstallation and VfiCleanup.exe are run as Administrator.







To change configuration parameters such as Base Support or Single Device System, the driver must be uninstalled and reinstalled.

If the Verifone Windows USB Driver is uninstalled and reinstalled with a different configuration (for example, Base Support changing from Yes to No) and a payment device is connected, the payment device may need to be rebooted or unplugged/replugged for the new settings to take effect. Some combinations of Windows versions and payment devices may have Windows require a PC reboot before the new settings can take effect.

For other issues, review the installation log for errors (see Installation section for more details). Verify the correct version is installed (for 5.0.5.2-B5 and later) in the registry at  
Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\VeriFone Inc\VeriFone USB Driver  
Installer\Setup\Version\_Info.

## 8.2 Operational Issues

There are many possible operational issues that can occur. Several common situations are discussed below. Initial debugging steps include categorizing the error (completely non-responsive or intermittent), evaluating what Device Manager is showing, and turning on logging, reproducing the error and evaluating the logs.

## 8.2.1 Non-Responsive Device

The Verifone payment device may appear non-responsive for several reasons. The following steps can help isolate the issue.

- First, verify the payment device is properly enumerated in Windows Device Manager, either under *Ports* for serial devices, under *Network adapters* for RNDIS configurations, or both for composite configurations. If it is not:
  - Verify:
    - The payment device is powered on
    - The USB cable is plugged in
    - The USB cable is not damaged or loose
    - The USB port it is plugged into is functional (test with a different USB device)
    - The payment device is responsive (i.e. reacts to pressing 1-5-9)
  - Test:
    - Does unplugging and re-plugging the USB cable cause it to enumerate?
    - Does rebooting the payment device cause it to enumerate?
    - Does rebooting the POS PC cause it to enumerate?
- If the device does enumerate but there is a “yellow bang” in Device Manager:
  - If the device shows up as “Unknown USB Device (Device Descriptor Request Failed)” it means the payment device was detected on USB but Windows couldn’t read its information in order to enumerate it. Possible causes:
    - Hardware issue: Bad device, bad cable, bad USB port on PC
    - 3<sup>rd</sup> party hardware issue: Some versions of Intel chipsets have an enumeration issue with long USB cables and devices running at Full Speed (USB-to-UART devices operate at Full Speed as do some legacy products depending on cable configuration). This can be worked around by putting a USB hub in between the payment device and the PC.
  - If the device shows up with the expected name string (see Device Manager Enumeration) but is still yellow banded, it could mean:
    - There is an issue with the driver installation.
      - Try unplugging/re-plugging the payment device
      - Try rebooting the PC
      - Try a full reinstallation including the recommended cleanup procedures
    - If the driver was installed in Single Device Mode and a second payment device is plugged in, that device will enumerate with a yellow bang. Remove the second device or reinstall the driver with Single Device Mode disabled.
- If the device does enumerate properly, the issue is likely with software configuration on the payment device or POS. Actions to consider:

- Verify the configuration is correct and matches between the payment device and POS (USB serial, matching baud rate etc. as per device requirements, payment device has correct USB mode configured, IP over USB is set up properly, correct IP addresses and ports are being used).
- If serial communication is being used, turn on logging and verify there are no errors in the logs.

## 8.2.2 Intermittent Connectivity

A payment device that is enumerating properly but connectivity is intermittent may be due to the following:

- Bad USB cable or loose connection (repeated refreshes of Device Manager can sometimes signal this situation)
- USB Power Management has not been disabled

## 8.2.3 RNDIS Issues

If IP over USB connectivity issues occur, try the following:

- Verify the RNDIS settings are correct in both the payment device and in Windows Network Connections, including sharing with the main internet connection
- Verify the outbound network connection of the POS PC is operational
- Verify the Internet Connection Sharing (ICS) service is running
- Attempt pings between the payment device and PC and vice versa, as well as pings between the payment device and the internet (8.8.8.8). Refer to the earlier section Verify RNDIS Configuration.
  - Note that some PC configurations will block pings from the payment device to the PC
- Check if there is an intermittent connectivity issue occurring. Intermittent connectivity issues result in the TCP/IP link going down so the POS application will need to reestablish the connection.

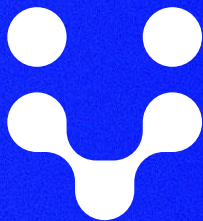
There is a known issue with Windows where if the payment device is disconnected (unplugged, in the middle of a reboot, powered off) when Windows reboots – specifically when the ICS service starts – the local subnet connection will function but the payment device will not be able to reach out to the shared internet even though all the settings look correct. This can be worked around by restarting the ICS service, unsharing and resharing the main network connection, or rebooting the POS PC.



817 Broadway, Suite 1100  
New York,  
NY 10003 USA



[www.verifone.com](http://www.verifone.com)



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