



Table of contents

Introduction	2
Background.....	2
Generic USB redirection	2
Device mapping/virtual devices.....	3
Methods summary.....	3
USB Manager overview	4
Protocol tab.....	4
Devices tab	5
Classes tab	5
Common use cases.....	6
Disabling mass storage devices.....	6
Forcing USBR of a specific device	6
Enabling USBR of Human Interface Devices	6
Appendix A: Remote protocol USB redirection support.....	7
Citrix-supported redirection	7
VMware-supported redirection (with Horizon View 5.2 Feature Pack 2 or higher).....	7
RDP-supported redirection.....	7
For more information	8

Introduction

USB Manager is a useful tool for managing USB devices and redirection on devices running HP ThinPro. As virtual desktop infrastructure (VDI) becomes more powerful, more and more companies are replacing their desktop computers with thin clients and expecting same-as-desktop behavior, including the use of USB devices. USB devices such as flash drives, webcams, and speakers enrich the user experience; thus, many customers want this function. This paper describes how to get the best performance from USB devices.

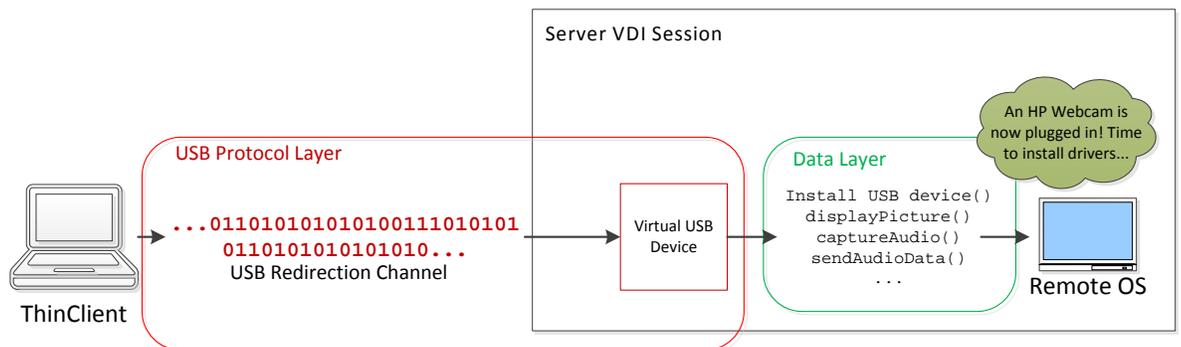
Background

To enable the user to use USB devices in a remote session, a protocol typically can use one of two methods: generic USB redirection (USB-R) and device mapping (also known as virtual devices).

Generic USB redirection

USB-R uses a virtual USB port on the server side to simulate that a redirected USB device is plugged directly into the remote system. To use this method, drivers must be installed on the remote system. The device displays its own name in the Devices and Printers dialog and any applications.

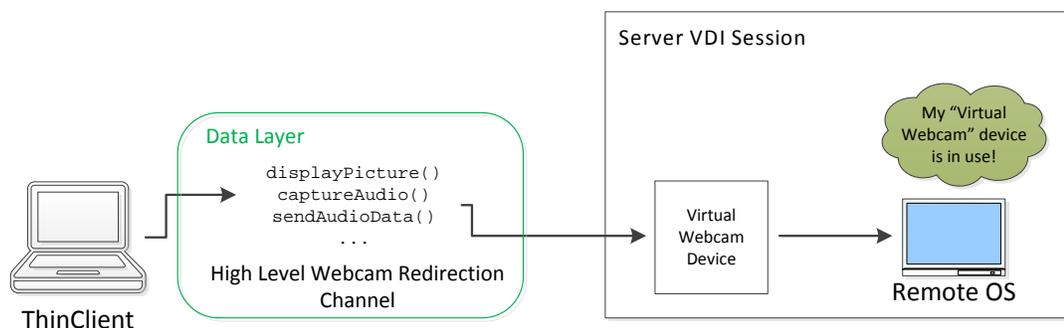
This means that as long as the device works on a computer running a Windows operating system, it should work in the remote session. Theoretically, this means the device behaves exactly as if it were being used on a local desktop.



In practice, this method of redirection might cause network congestion problems or issues with real-time audio or video devices such as headsets or webcams. The USB protocol stack is not designed to handle long latency or packet loss, and some devices perform poorly (or not at all) when redirected using USB-R. For example, webcam and audio devices tend to perform poorly in Citrix and VMware sessions with USB-R. To resolve these issues, many protocols use the device mapping, or virtual devices, method as an alternative.

Device mapping/virtual devices

Device mapping, or virtual devices, uses the concept of virtual devices to maximize the performance of specific types of USB devices. The USB device communicates locally to the thin client and then relevant data is transferred over a virtual channel that is designed specifically for the data payload. By transmitting only the important data and reducing the granularity of handshaking, this method can reduce latency and improve performance for real-time devices. Remote protocols tend to offer this method of redirection for USB devices such as speakers, headsets, webcams, disk drives, and printers. Special drivers do not need to be installed on the remote computer because the USB device is handled directly by the thin client.



Because device mapping tends to perform only the core functions of the device (that is, audio, printing, or storage), the device might have only basic functions common to all devices of that type. For example, if you are using device mapping redirection for a headset, it is possible that only the audio functions and that any volume or muting keys do not work. Similarly, a multifunction printer's scanning functions might not be available with device mapping.

Generally, this method of redirection is recommended and, by default, enabled for all device types that support it. This support varies from connection type to connection type and from device to device. Occasionally, you might need to use USB Manager or the connection settings to adjust the settings for specific devices to force USB redirection to use special features of the device in the remote session, such as special buttons, fingerprint readers, or drive encryption.

Methods summary

Generic USB redirection (USBR)

Pros

- The device does not need to work directly on a computer running HP ThinPro to work in the remote session, because all drivers are handled on the Windows server side.
- All the features of the device that are available during a regular Windows session are available during the remote session.
- The remote desktop sees an actual device and handles it the way you are used to.

Cons

- Latency and bandwidth restrictions can cause issues in some circumstances.
- This method tends to have higher network congestion and local CPU usage.
- Webcams and microphones do not work well in Citrix or VMware sessions.
- It is not supported in XenApp 6.5 or below or in older versions of RDP.

Device mapping/virtual devices

Pros

- Network congestion and latency issues are reduced.
- Some devices work well only using this method.
- Better supports real-time audiovisual devices on Citrix and VMware

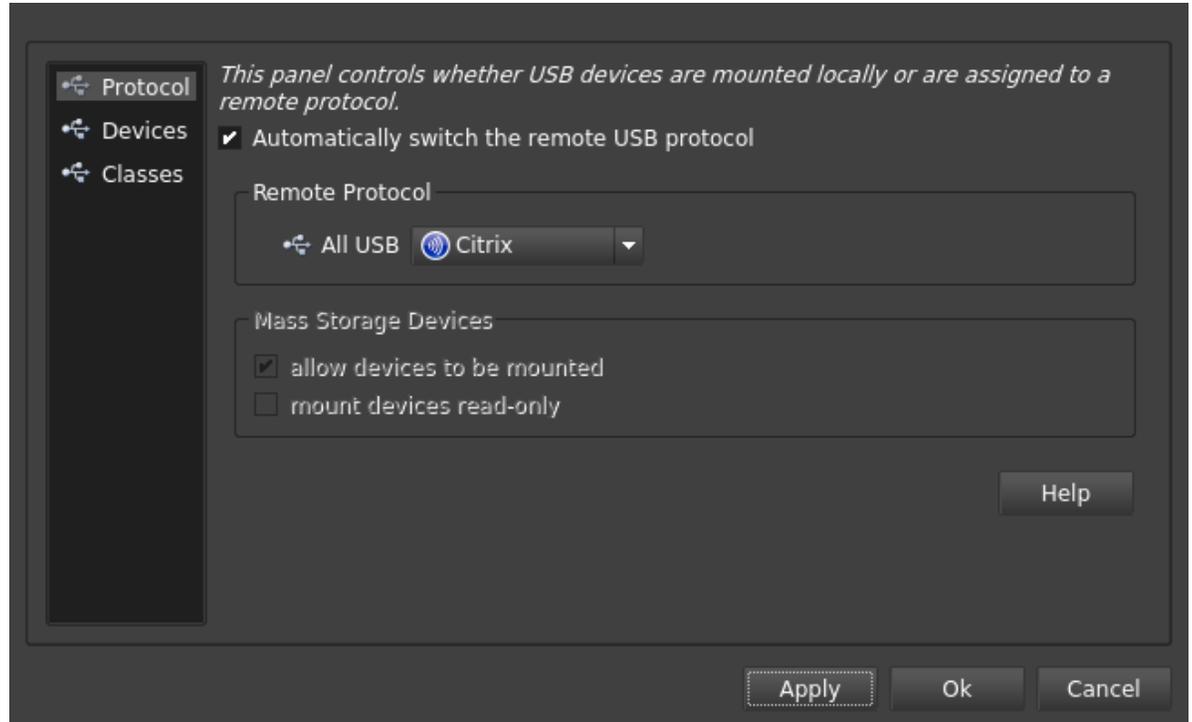
Cons

- The device must follow industry standards to have local support on systems running HP ThinPro.
- Some devices, especially multifunction devices such as all-in-one printer/scanners, have functions that do not work with device mapping.
- Device mapping does not support all USB device types.

USB Manager overview

USB Manager can be used to configure both which devices are redirected and, depending on the protocol, how the devices are redirected. USB Manager can also disable all device redirection. Generally, the default options do not need to be changed and most USB devices are redirected automatically to the remote session in the most efficient way possible. For troubleshooting or for specific use cases, you might need to use this tool to adjust the settings.

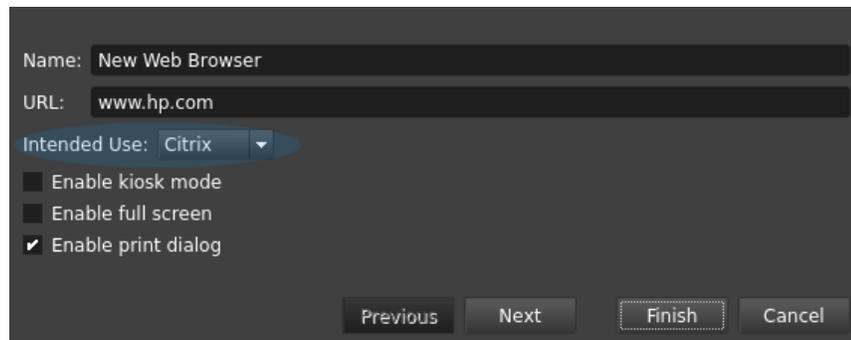
Protocol tab



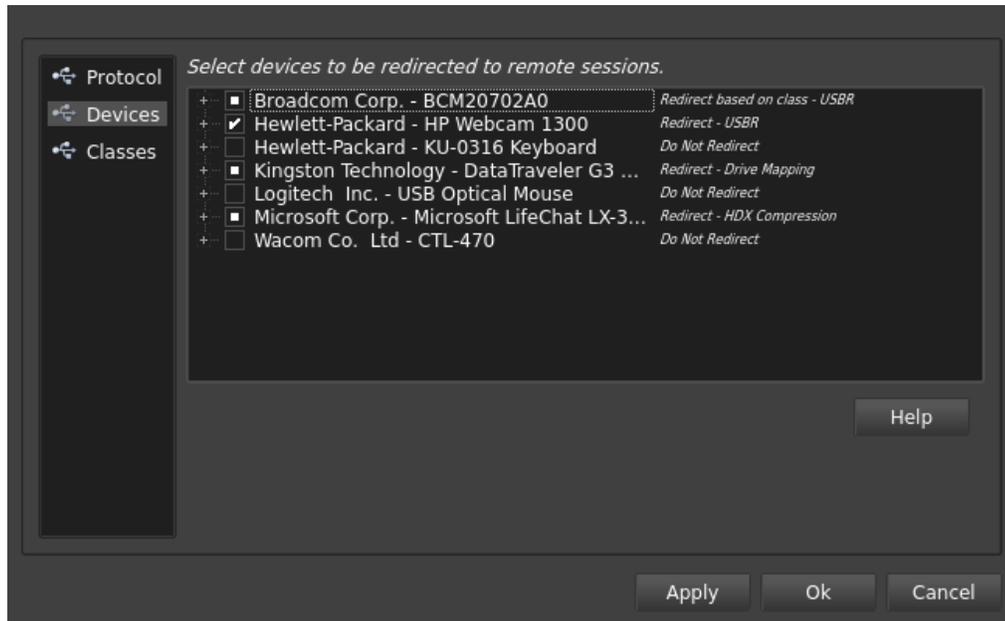
USB devices cannot simultaneously use two different remote protocols; therefore, the Protocol tab is used to select which remote protocol has control over the USB devices plugged into the system. The Local option completely prevents USB devices from being redirected.

On systems running HP ThinPro 5.2 and higher, this setting changes automatically when you launch a connection, as long as no other connections of a different type are already running. You can disable this behavior by clearing the **Automatically switch the remote USB protocol** checkbox.

Web Browser connections can be designated for use with Citrix, RDP, or Internet. This setting is used to control automatic switching when a Web Browser connection starts.

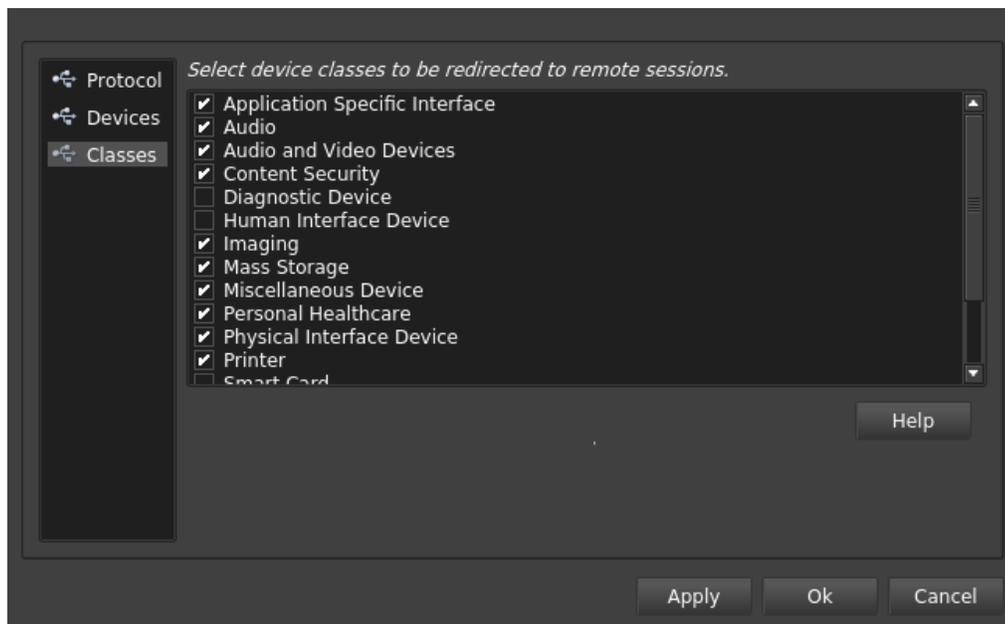


Devices tab



This tab can be used to control the method of redirection for a specific USB device that is plugged into the system. This setting overrides the standard settings for a USB device of that class. This selection persists after restarting the thin client. To force the USB device to use USBR for Citrix or VMware connections, select the checkbox to the left of the device name. For RDP connections, USB Manager controls only whether a USB device is redirected. To change the redirection method, use the RDP connection settings.

Classes tab



This tab is available in HP ThinPro 5.2 and higher. To enable USBR to Citrix or VMware remote sessions for specific device classes, select the checkbox next to the device class name. To override this setting on a device-by-device basis, use the Devices tab. This selection persists after restarting the thin client.

Note

The Human Interface Device class is disabled by default to prevent unintentional redirection of the system mouse, keyboard, and touchscreen. HP recommends selecting specific human interface devices for redirection on the Devices tab.

Common use cases

Disabling mass storage devices

USB flash drives and other mass storage devices present a security risk for certain customers.

To prevent these USB devices from being redirected:

1. In the **Classes** tab, clear the **Mass Storage** checkbox.
2. To disable mass storage devices from being accessible locally on the system running HP ThinPro, in the **Protocol** tab, clear **allow devices to be mounted**.

Forcing USBR of a specific device

If a USB device is not working properly using device mapping, you might use USBR.

To force a specific device to use USBR for Citrix and VMware connections:

1. Make sure the device is plugged into the thin client.
2. Open **USB Manager** and select the **Devices** tab.
3. Click the checkbox next to the device name until USBR appears in the column to the right and a checkmark is displayed.
4. Restart your connection.

To force a specific device to use USBR for RDP connections:

1. In USB Manager, verify that the device is set to **Redirected**.
2. In the **Classes** tab, verify that the device class is selected for redirection.
3. In the **Local Resources** tab, select a redirection method for the device class. For example, audio devices can be set to use device mapping (high level) or USBR (low level). Devices can also be disabled for an individual connection.

Enabling USBR of Human Interface Devices

One USB device class is Human Interface Devices (HID). These are devices such as mice, keyboards, touchscreens, and touchpads. By default in HP ThinPro 5.1 and lower, this device class is redirected using USBR. Typically, these devices work best when used locally and not redirected. Therefore, by default in ThinPro 5.2 and higher, this device class is not redirected. Some devices other than those listed previously, such as tablet pens, joysticks, auxiliary keypads, and software license transceivers might represent themselves as HID, but work better when redirected using USBR. To force USBR of these specific devices, enable those devices individually. See Forcing USBR of a specific device.

Note

By default, VMware enables USB redirection of the HID class. To select individual devices to be kept local, use the **Devices** tab.

Appendix A: Remote protocol USB redirection support

Citrix-supported redirection

Device type	Redirection method
Disk drives/USB flash drives	Drive mapping
Webcams	Citrix Webcam Virtual Device
Printers	Printer Mapping
Audio devices	Citrix Virtual Audio Device
Other USB device on Citrix XenDesktop with desktop operating system	Low-level USBR

VMware-supported redirection (with Horizon View 5.2 Feature Pack 2 or higher)

Device type	Redirection method
Webcams	VMware Real Time Audio (RTAV)
Printers	Thinpring virtual printer device
Audio devices	RTAV
Other USB device	Low-level USBR

RDP-supported redirection

Device type	Redirection method
Disk drives/USB flash drives/mass storage devices	Device mapping
Printers	Device mapping
Audio devices	Device mapping
Other USB device on newer RDP servers	Low-level USBR

For more information

For more information about HP ThinPro, go to the following websites:

- **HP ThinPro home page:** <http://www.hp.com/go/thinpro>
- **HP Support Center:** <http://www.hp.com/go/hpsc> (search for your thin client model and see the Manuals page for documentation)

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First Edition: July 2015

