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Agility™ iPATH™

Advanced USB Features

This document describes the advanced USB features
supported by Agility iPATH Version 3.3, 4.0 and later releases.

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You'll be live with one of our technical experts in less than 60 seconds.

1.   Introduction

This document explains the operation of the advanced USB features that have been included in the Agility KVM Switch and the iPATH unit from firmware version 3.0 and above.

For the advanced USB features to work, both endpoints must be on the same firmware version above 3.0.

For USB Flow control to be enabled, all endpoints need to be at version 3.5 or above.

There are four parts to the advanced USB features:

- Device merging
- Port reservation
- Flow control
- USB quirks or advanced features.

1.1   Device Merging

Merging is the process of combining multiple equivalent USB human interface devices to appear to the host computer as a single device. You can merge HIDs to increase efficiency.

As long as the HID devices have the same Vendor ID (Vid) and Product ID (Pid), then the 13-device limit on devices connecting to a single USB hub can be overcome. (This is the USB specification.)

The TX unit can enumerate 13 different devices, but you can have many more devices connected to it. Merging is the default setting on the Agility receiver. There are USB devices and drivers that do not behave correctly if merging is applied. Some drivers are looking for individual serial numbers of the device. To support these devices or functionality based on the individual serial number, disable merging for devices attached to identified Rx Unit ports. All devices attached to a port that has the merge capability disabled will be treated as individual devices.

1.2   Port Control

The Agility Transmitter reports itself as a 13-port USB hub. The 13 devices are allocated ports on this hub by the lowest available port basis. Though this is sequential, it is random in nature in that the next device to connect gets the next available port. This can cause issues where by a driver is looking for a device on a set USB port. This port can be changed, when receivers are switched away and reconnected to the transmitter, and the device driver will no longer able to find the device. To overcome this issue, you can reserve a number of USB ports on the Transmitter and then assign the reserved ports to a particular device on the receiver. This feature is often necessary when using dual touch screens on an Agility receiver. If the touch screens' port numbers changed (because the port numbers are used to assign a screen to a particular head) the control of the screens might swap over. When you reserve a port for a particular screen, this no longer happens.

1.3 USB Quirks

When you use Agility, a number of USB devices have been found to function incorrectly. The reasons for these problems have many root causes, from issues with delays, specific configuration settings, and many more. As part of the on-going support for Agility products we are actively looking for solutions. Many of these solutions are only applicable to specific devices. Rather than require the Agility system to be constantly updated with new device drivers, the advanced USB settings allow a number of patches to be applied depending on the issue identified.

The patches are controlled in the USB Advanced Settings by adding a kernel or user code in the appropriate field. There are two different input methods depending upon whether you are using the Agility in a point-to-point configuration along with the receivers'

web interface, or whether the Agility Receivers and Agility Transmitters are under iPATH control. iPATH requires the codes to be entered as a decimal value and the Agility units require them to be entered as a Hex value.

1.4 Flow Control V3.5

USB flow control is included in Version V3.5 of the Agility firmware. Flow control is required for a number of more complex USB peripherals, including some touch screens and mutli-function/combined devices. This is buffer size flow control and is set by applying the following code; 0x1000AAA 0r decimal 16779946

1.5 Logitech Set-point disable V4.1

Logitech keyboards and mice that use the Logitech unifying receiver have the ability to use a special Logitech mode in order to provide extra functionality when the Logitech Set point Driver is installed on the host. Unfortunately as this uses a proprietary transmission protocol the Black Box Agility cannot support Logitech Set point and we recommend that this is uninstalled from the host computer. We have come across an OS Ubuntu 14.04LS where the Logitech Set point Driver is built in and it is not possible to disable this.   When using Ubuntu 14.04 with the Logitech unifying receiver we have developed the following user code 0xAAE. By applying this to the Black Box Agility the Unifying receiver will report itself to the host as an Adder VID and the Logitech set point is therefore disabled.

1.6 Card Reader support V4.2

In order to support card readers in firmware version 4.2 the following quirk is applied automatically when a card reader is reported. This is packet level flow control and its code is 0x2000AAA or 33557162.

1.7 Known Device Codes

The table below lists the devices that Black Box has come across that require an advanced USB code and their associated settings.

The list is by no means exhaustive, but these are devices that we know about. This list will be updated periodically, but may not be up-to-date.

If you find issues with specific USB devices, contact Black Box Technical Support at 724-746-5500 to info@blackbox.com. We will help you determine whether there is a known patch code.

P-P refers to "Point-to-Point" mode, where the web server on the individual TX and RX units is used to set up the device.

Table 1. Device that require an advanced USB code.

USB Device	P-P Kernel Code	P-P User Code	iPath Kernel code		iPath User Code	Minimum FW version
Eizo cx240 screen with Colormunki	0x0	0x0AEA	0		2794	3.1
Eizo CG276 Screen	0x0	0x0AEA	0		2794	3.1
Thrust master HOTAS joystick	0x0	0x0AAC	0		2732	3.1
Mouse Trapper Office	0x4	0x0	4		0	3.1
Logitech K310 keyboard	0x4	0	4		0	3.1
Logitech illuminated keyboard	0x4	0	4		0	3.1
Logitech K520e	0x4	0	4		0	3.1
Microsoft wired 600 keyboard	0x0	0x0ABA	0		2746	3.1
Wacom Intuos 4 tablet	0x0	0x0	0		0	3.1
Newtek Tricaster	0x0	0x1000AAA	0		16779946	3.5
ELO ET2201L Touch screen	0x0	0x1000AAA	0		16779946	3.5
PQlabs pqp4a2101 touch panel	0x4	0x1000AAA	4		16779946	1.5

2.   Setup Guide

2.1   Point-to-Point

To set up a quirk, you need to reserve a number of USB ports. Navigate to the transmitter USB settings page. In this example, two ports are reserved.
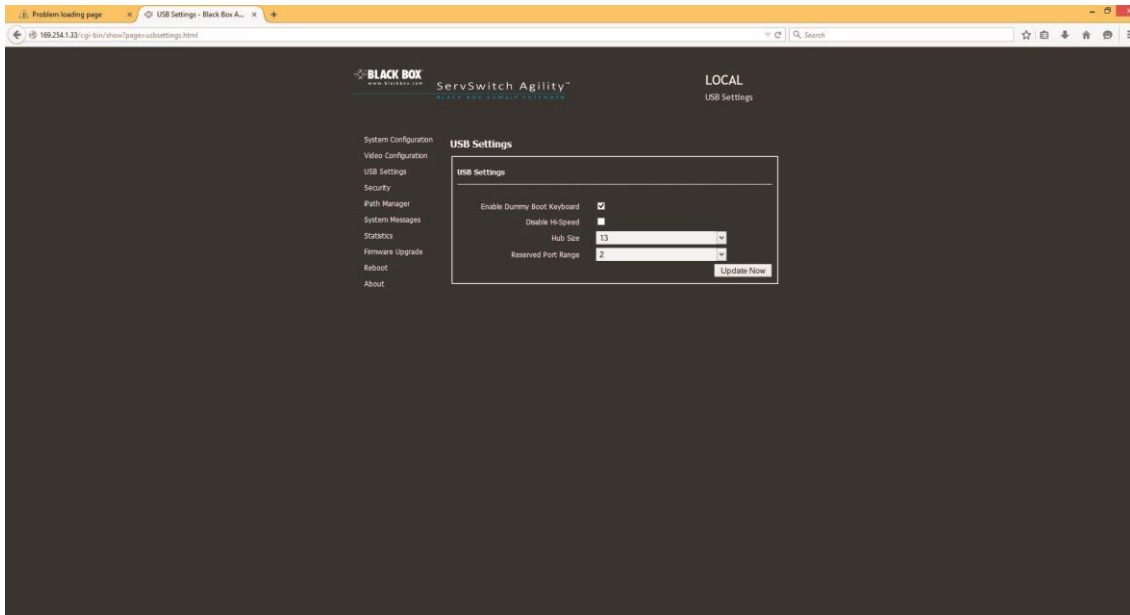

Figure 2-1. USB Settings page, Transmitter.

For the receiver, click "Enable Advanced Features" then set the appropriate quirk codes and save.
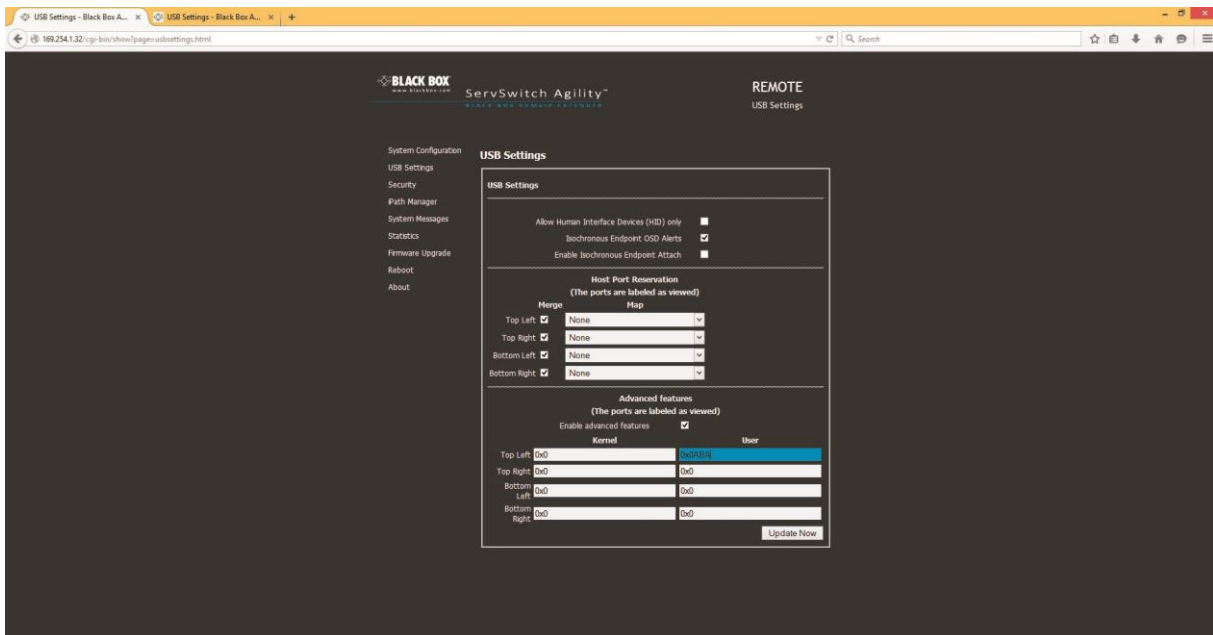

Figure 2-2. USB Settings page, Receiver.

2.2 iPATH Control

From iPATH, ensure that a number of USB ports are reserved. You can do this from the global or local settings.
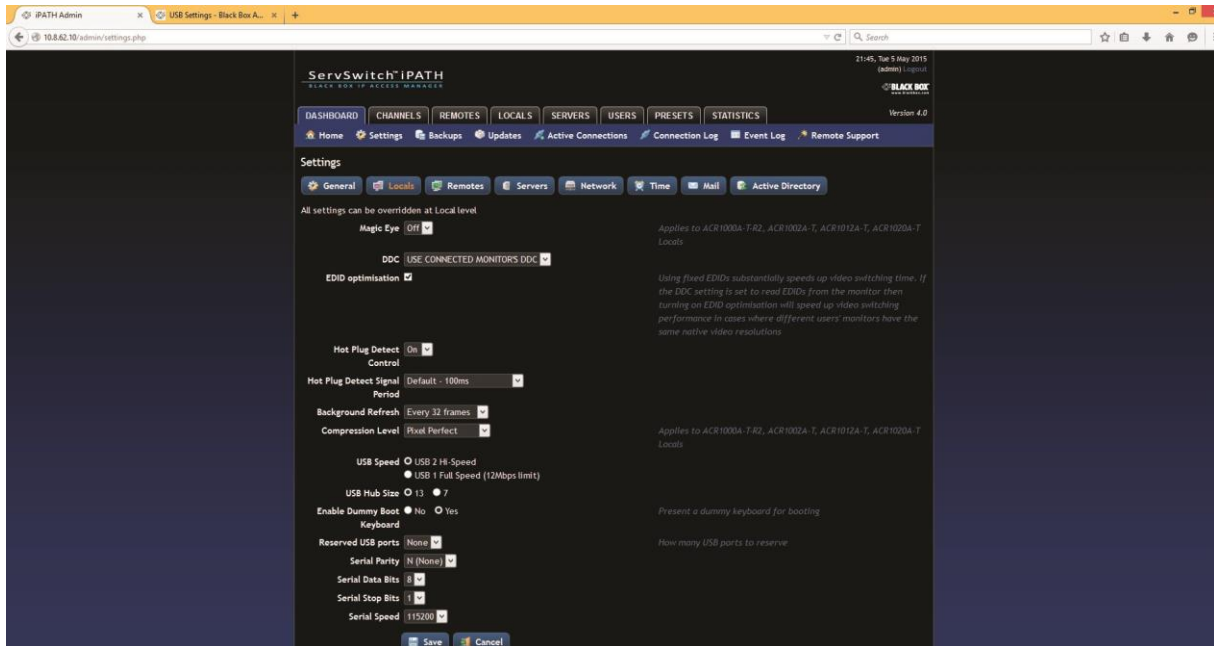
Figure 2-3. IPATH Settings page, Dashboard selected.

At the receiver, select a device from the list or create a new device if you have been given a new code to try.

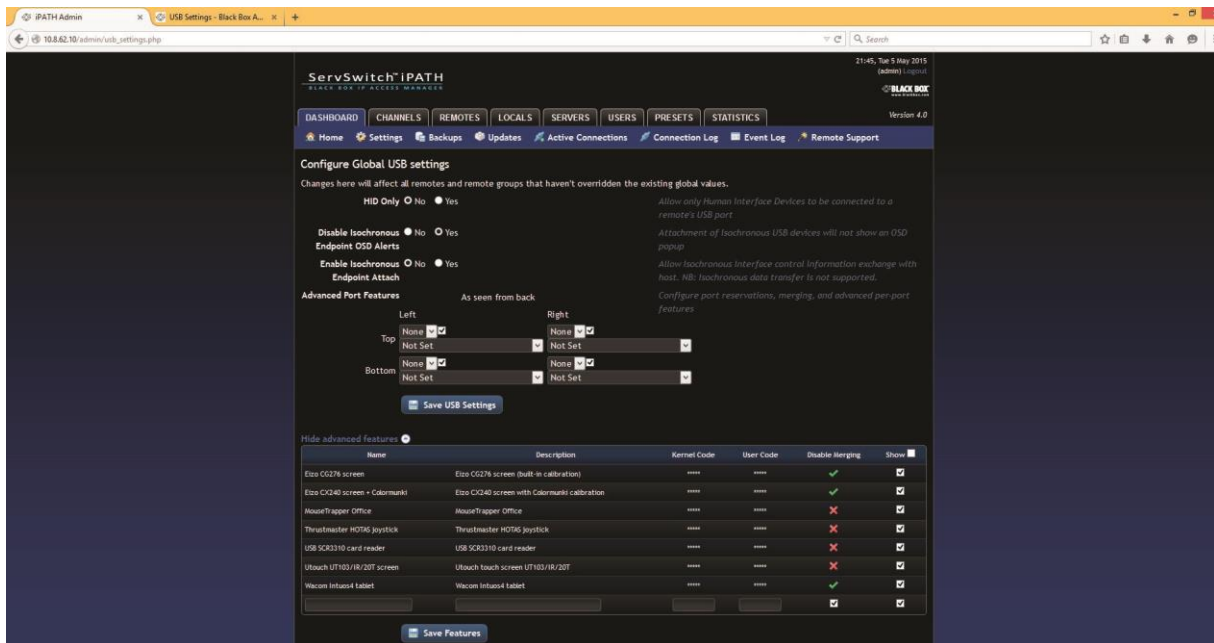To determine which firmware version supports which feature, refer to the list in this document.

Figure 2-4. IPATH Settings page, Receivers selected.

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Agility Advanced USB Features, version 3