Testing a usb3sun on local Sun hardware

Anthony Sorace
a.9srv.net

Strand 1 Technologies

ABSTRACT

We test a new revision A3 running firmware 1.5 with a variety of keyboards against the lab's compatible Sun equipment. All host systems work as expected. Most keyboards work as expected; two do not. No variation is observed with keyboard-host combinations.

Introduction

Many older Sun systems, particularly SPARCstations and early Ultra systems, use a serial-like connection between the keyboard and the host system. The usb3sun, by *the funny computer museum*, allows you to use a modern USB keyboard with these systems. Here, we test our three Sun systems which use this keyboard type against a usb3sun and various keyboards. The following host systems were tested:

- SPARCstation 20
- SPARCstation 2
- Ultra 5

The keyboards are listed in the table. While the usb3sun also supports USB mice, none were tested due to software constraints.

Findings

Keyboard vid:did	System			Notes
	SS20	SS2	Ultra 5	
Apple A1243 0x05ac:0x024f	Fails	Fails	Fails	See below
Inland 208397 0x04d9:0x1503	Works	Works	Works	Awful, cheap, junk
gboards.ca Gergo 0xfeed:0x1307	Works	Works	Works	QMK; weird
Preonic OLKB-60 0xfeed:0x6061	Works	Works	Works	QMK
Atreus (technomancy) 0x1209:0xa1e5	Works	Works	Works	QMK
Keyboardio Atreus 0x1209:0x2303	Fails	Fails	Fails	Kaleidoscope

The behavior for the Apple keyboard is odd. The usb3sun makes no beep on connect, but makes the standard beep on disconnect. If a different (working) keyboard is attached, it behaves normally. If the Apple keyboard is re-attached, though, the usb3sun seems hung: no connections from any keyboard are recognized, and no beep is

emited on disconnecting the Apple keyboard. A reset using the on-board button restores normal function. This keyboard is known to function normally with other non-Apple hardware (it was used to type this report while connected to a Raspberry Pi running Plan 9).

Notably, the Keyboardio Atreus does not exhibit this behavior; the usb3sun beeps on connect/disconnect as for the working keyboards.

Diagnostics

The lines from Plan 9's `/dev/usb/ctl` corresponding to each device are reproduced below.

Apple A1243

ep9.0 enabled control rw speed high maxpkt 64 pollival 0 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 7 busy
hub csp 0x010009 ports 3 'Apple, Inc.' 'Keyboard Hub' xhci
ep10.0 enabled control rw speed low maxpkt 8 pollival 0 samplesz 0 hz 0 hub 7 port 2 rootport 1 addr 8 busy
hid csp 0x010103 csp 0x000003 vid 0x05ac did 0x024f 'Apple Inc.' 'Apple Keyboard' xhci
ep10.1 enabled interrupt r speed low maxpkt 8 pollival 10 samplesz 0 hz 0 hub 7 port 2 rootport 1 addr 8 busy

Inland 208397

ep12.0 enabled control rw speed low maxpkt 8 pollival 0 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 10 busy
hid csp 0x010103 csp 0x000003 vid 0x04d9 did 0x1503 ' ' 'USB Keyboard' xhci
ep12.1 enabled interrupt r speed low maxpkt 8 pollival 10 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 10 busy

gboards.ca Gergo

ep12.0 enabled control rw speed full maxpkt 8 pollival 0 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 11 busy
hid csp 0x010103 csp 0x000003 csp 0x000003 vid 0xfeed did 0x1307 'g Heavy Industries' Gergo xhci
ep12.1 enabled interrupt r speed full maxpkt 8 pollival 10 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 11 busy

Preonic OLKB-60

ep12.0 enabled control rw speed full maxpkt 8 pollival 0 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 12 busy
hid csp 0x010103 csp 0x000003 csp 0x000003 vid 0xfeed did 0x6061 OLKB Preonic xhci
ep12.1 enabled interrupt r speed full maxpkt 8 pollival 10 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 12 busy

Atreus (technomancy)

ep12.0 enabled control rw speed full maxpkt 8 pollival 0 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 14 busy
hid csp 0x010103 csp 0x000003 csp 0x000003 vid 0x1209 did 0xa1e5 Technomancy Atreus xhci
ep12.1 enabled interrupt r speed full maxpkt 8 pollival 10 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 14 busy

Keyboardio Atreus

ep12.0 enabled control rw speed full maxpkt 64 pollival 0 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 15 busy
239 csp 0x0102ef csp 0x000202 csp 0x00000a csp 0x000003 csp 0x000003 csp 0x010103 vid 0x1209 did 0x2303 Keyboardio Atreus xhci
ep12.6 enabled interrupt r speed full maxpkt 64 pollival 1 samplesz 0 hz 0 hub 4 port 3 rootport 1 addr 15 busy

A few things stand out as noteworthy about the two non-functioning keyboards:

- The Apple keyboard is the only one which reports a built-in hub.
- All of the functioning keyboards report maxpkt 8; both non-functioning keyboards report maxpkt 64 (although the Apple keyboard also reports 8 for other sub-devices).
- Both non-functioing keyboards report csp (class/subclass/protocol) not found in the working keyboards.

Revisions

2023-03-05
- Added keyboard vid/did to the keyboard listing.
- Added *Diagnostics* section.