

Rubywand: The default SW1 settings (x) are ...

ON	x		x			x	m	m
OFF		x		x	x		m	m
	1	2	3	4	5	6	7	8

- 1- Cxxx/Dxxx Cache: ON= enabled.
- 2- Defeat Joystick delay: OFF= allow delay.
- 3- Defeat AppleTalk delay: ON= no delay for AppleTalk.
- 4- Counter Delay: OFF= no delay. Set ON to pass IIGs diagnostic self-test #05 ("Speed Test").
- 5- CPS Follow: OFF for floppy drives to work.
- 6- ZipGS enable: ON. Set OFF to allow power up boot in slow mode.

7 & 8- Set these to installed Zip cache memory size:

ON	ON	8k
ON	OFF	16k
OFF	ON	32k
OFF	OFF	64k

SW2 controls whether a Slot card is accessed at full speed (ON for SW2-< Slot#> ) or "normal" speed (OFF for SW2-< Slot#> ).

The default SW2 settings (x) are ...

ON	x	*	x	x	x		x	
OFF		x				x	x	
	1	2	3	4	5	6	7	8

On our Zip-GSx, \*Slot 2 has a RamFAST SCSI interface and SW2-2 is set ON. Otherwise, the settings we use are the defaults shown.

Most Slot cards seem to work fine without needing to do a slow-down. For example, we run a Focus Hard Card in Slot 7 and the RamFAST in Slot 2 (the Zip-GSx is in Slot 3). Your Stereo Card does not care; and, when the Mockingboard is plugged into Slot 4, the setting remains at ON.

Every once in a while, Slot 2 is used for testing telecom programs which need to use Slot 2 firmware and the Slots setting goes to "Modem Port" (from "Your Card" for the RamFAST). No change is made to the Zip-GSx settings-- SW2-2 remains ON-- and everything seems to work fine.

Whether or not a particular card can work without a slow-down is something you can determine by experimentation. This is easiest using the Zip CDA accessed via the Desk Accessories menu (OpenApple-Control-Escape). The CDA settings are not permanent. Once you find the settings you like, you can turn OFF the computer and set the switches on the board to match the settings that work best.

Todd P. Whitesel - Why should AppleTalk Delay be disabled with a ZipGS?

Because it saps performance every time an interrupt occurs.

The AppleTalk delay was originally called the "Interrupt Delay" but they renamed it at the last minute because somebody actually tried an 8/64 on an AppleShare network and it dropped packets like crazy.

With "AppleTalk delay" on, every time an interrupt occurs your Zip will disable acceleration for 5 ms, just like it does with the paddles and the speaker and the others. This is a significant effect because with VBL interrupts going you have one every 16 ms, so your Zip spends nearly 1/3 of the time not accelerating you.

Why this "fixes" AppleTalk: in system 5 and earlier (including the ROM AppleTalk code), there are software timing loops which assume 2.8 MHz operation. As you speed the system up, it gets more and more likely to drop incoming packets because it thinks they are being sent too slowly to be correct, when in reality the AppleTalk code is timing out too fast.

Why the AppleTalk delay is not a complete solution: a full-size AppleTalk packet that you'd get from a file server takes about 14 ms to transmit. The AppleTalk delay covers the first 1/3 of the packet, the VBL interrupt covers at most another third of the packet, but nothing is guaranteed to keep acceleration off for the whole packet. If you speed the Zip up more, say to 10/64, it starts dropping long packets no matter what.

This latter problem was why I originally wrote ZipTalk. It required a slot delay to be enabled (in, say, slot 6 or 7), and before each AppleTalk packet was received I tweaked that slot -- slot delays are 50 ms, so the Zip stays unaccelerated way past the end of the packet and everything works. (I also patched packet sending, to be safe.)

In system 6 Apple fixed things correctly in the AppleTalk drivers. I removed the code from ZipTalk and released what remained as ZipFix. As of 6.0.1, the cursor flicker problem was fixed by apple in the control panel, so now you only need ZipFix for the GS/OS SET\_SYS\_SPEED hook, which nobody seems to use.

What are the correct settings for a Zip-GSx? I've tinkered with "CPS Follow", "Counter Delay" and the like but have no idea what I'm actually doing.

CPS Follow should always be enabled. If you disable it you will have problems with Disk ]['s and System 6's AppleTalk driver and anything else that expects the Zip to slow down to 1 MHz when the GS is instructed to slow down to 1mhz. For instance, border text demos (like the FTA XMAS demo) won't work if you have this disabled. Expect weird things to happen if you play with this one.

Counter Delay I would recommend leaving enabled. This causes the Zip to "deaccelerate" (actually all it does is temporarily ignore that any data can be read from the cache instead of the motherboard) for about 5 milliseconds any time you read one of the Video Counters -- this is really only there so that one of the self-tests will pass. Which way you set it shouldn't be fatal.

AppleTalk or Interrupt Delay should always be disabled. The desktop will run much slower if you enable it. The only reason most people needed it was for AppleTalk under system 5, and I have an init on tybalt that fixes that. System 6 fixed the problem but requires CPS Follow to be enabled for the fix to work.

Speaker and Paddle delays are intended to let old 1-bit sounds and Paddle access work the way they do on an unaccelerated IIgs. I recommend leaving these on unless you feel like experimenting. They shouldn't be fatal but some program might react very negatively, so be prepared.

Bank C/D Cache Enable -- leave this at the default setting and forget about it. This tells the Zip if it's OK to cache bank-switched RAM (the old language card area). Zip's own docs say "there is no know software requiring this" but that it why it's there, in case somebody ever finds software that doesn't like it you can try setting it the other way.