

# Apple II File Type Notes



Developer Technical Support

**File Type:** \$BB (187)

**Auxiliary Type:** All

Full Name: Apple IIGS Device Driver File

Short Name: Device driver

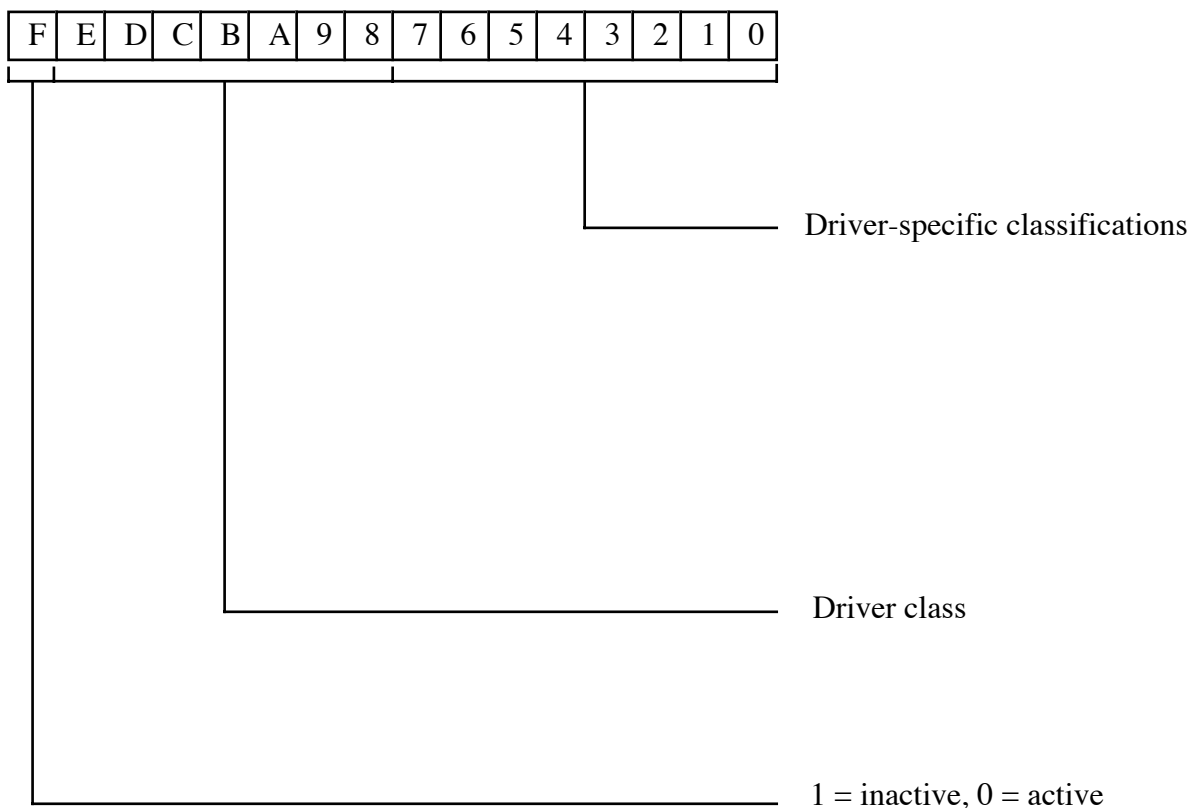
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Files of this type and all auxiliary types contain Apple IIGS device drivers.

An Apple IIGS device driver is defined as code that is necessary to control or operate a peripheral in a desired manner. A driver file's data fork contains code (in Object Module Format) that can be loaded by the System Loader or ExpressLoad and executed.

The format of a driver file depends largely upon the auxiliary type of the driver. Each driver has a **class** and an **inactive flag** in the auxiliary type, as Figure 1 indicates.



**Figure 1–Auxiliary Type Definition**

If bit 15 of the auxiliary type is set, the driver is considered inactive and should not be used. If the bit is clear, the driver is considered active and may be used if desired. Users may inactivate drivers from the Finder and are likely to be confused if a driver they marked as inactive continues to appear.

Bits 14 through 8 determine the driver’s class. This mechanism allows many types of device drivers to share the same OMF-compatible file type. Table 1 lists defined classes of drivers.

<b>Class</b>	<b>Definition</b>
\$00	Print Manager driver
\$01	GS/OS driver
\$02	AppleTalk driver
\$03	MIDI Tools driver
\$04—\$7E	<b>Reserved</b>
\$7F	Third-party multimedia driver

**Table 1–Driver Classes**

The low byte of the auxiliary type (bits 7 through 0) is referred to as the subclass, and it depends upon the driver class for interpretation. Below are the interpretations for the defined driver classes.

**Print Manager Drivers**

For class \$00, the low byte determines the kind of Print Manager driver is contained in the file. A subclass of \$00 indicates a printer driver, a subclass of \$01 indicates a directly-connected port driver, and a subclass of \$02 indicates a network port driver. All other values in the subclass for Print Manager drivers are **reserved**.

Printer and Port Drivers are documented in Apple IIGS Technical Note #35, Printer Driver Specifications and in Apple IIGS Technical Note #36, Port Driver Specifications.

**GS/OS Drivers**

GS/OS drivers are class \$01. GS/OS groups the subclass into two fields. Bits 7 and 6 indicate the GS/OS driver type. A value of 00 indicates a standard GS/OS device driver. A value of 01 indicates a GS/OS Supervisor driver. A value of 10 indicates a GS/OS “boot driver,” a GS/OS driver which is loaded before other GS/OS drivers to control the boot device. For further information on boot drivers, contact Developer Technical Support. A value of 11 is **reserved** and must not be used by GS/OS device driver authors.

Bits 5 through 0 are defined by the GS/OS driver type. For standard device drivers, this field indicates the maximum number of devices supported; the GS/OS Device Dispatcher will use this

field to allocate memory when the driver is loaded. For all other GS/OS driver types, this field is **reserved** and must not be used by GS/OS driver authors.

GS/OS driver definitions are documented in *GS/OS Reference*, Volume 2.

## AppleTalk Drivers

The subclass is used by AppleTalk to determine in which order the drivers should be loaded. Programmers should treat every AppleTalk driver (all subclasses) as **reserved**; do not change the auxiliary type in any way, not even to deactivate the drivers.

Class \$02 drivers are AppleTalk protocol drivers, including ROM patches for AppleTalk firmware. These drivers are currently loaded and initialized by the SCC.Manager supervisor driver.

**Note:** The SCC.Manager driver must **not** be deactivated as it arbitrates use of the serial ports. It is required for AppleTalk to function. Similarly, the AppleTalk drivers must not be deactivated individually or AppleTalk may not be initialized correctly. Disable AppleTalk in the Control Panel. You may then use the Apple IIGS Installer to remove AppleShare if you wish to remove AppleTalk drivers and protocols from a disk.

AppleTalk drivers are loaded only if AppleTalk is enabled in the Control Panel. The drivers are initialized in alphabetical order; therefore, you should not change the names of existing AppleTalk drivers.

In the driver subclass, bit 7 indicates whether the flag is a standard AppleTalk protocol. For protocols that you write and ship, this bit must be set to 1. If you feel your driver should have this bit set as a standard protocol, contact Developer Technical Support. Bits 0-3 of the subclass indicate the **maximum** ROM version for which the driver should be loaded. For example, a driver with a value of 1 in this field will not be loaded on a machine with a ROM version greater than 1. A driver with a value of 3 will not be loaded on future Apple IIGS machines, but will be loaded on all current machines.

AppleTalk drivers are called to initialize themselves in full 16-bit native mode. The A register contains the current AppleTalk channel number (i.e., which port is being used for AppleTalk); the X register contains the ROM version; the Y register contains the AppleTalk firmware slot number. Drivers should return from initialization with the carry clear and zero in the accumulator if initialization was successful or carry set and an error code in A if initialization failed. You may assume that AppleTalk is active during AppleTalk driver initialization. Your driver should perform necessary installation tasks (such as opening a socket or adding routines to the dispatch table at \$E1D600) during initialization.

The remaining bits in the driver subclass are **reserved** and must not be used by AppleTalk driver authors.

## MIDI Tools Drivers

The subclass field for MIDI Tools drivers is currently **reserved** and should be set to zero. MIDI Tools Drivers are documented in Apple IIGS Technical Note #54, MIDI Drivers.

### **Third-Party Multimedia Drivers**

The third-party multimedia driver class indicates drivers used by applications or other non-system components to control multimedia peripherals such as videodisc or video tape players. The subclass for this class is **assigned** for each driver by Developer Technical Support, as are most file type and auxiliary type combinations. Developers wishing to provide a multimedia driver must contact Developer Technical Support for a subclass assignment.

## What's Reserved?

Since so many types of drivers are all using the same file type, it is **essential** that you adhere to the auxiliary type conventions specified in this Note. If you are creating a driver whose auxiliary type can not be completely defined using the guidelines in this Note, contact Developer Technical Support for assistance, or for further assignment. If you are creating a driver which does not fit into an existing driver class, contact Developer Technical Support for a new class assignment.

Do not use any field marked as **reserved** in this Note to store any number other than zero.

## Further Reference

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- *Apple IIGS Toolbox Reference*
- *GS/OS Reference*, Volume 2
- Apple IIGS Technical Note #35, Printer Driver Specifications
- Apple IIGS Technical Note #36, Port Driver Specifications
- Apple IIGS Technical Note #54, MIDI Drivers