

XEROX
BUSINESS SYSTEMS
Systems Development Department

To: Distribution
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DRAFT — pre-release version

This memo describes CoPilot 1.0, the debugger used by clients of Pilot 3.0.

Mandatory references

Mesa Debugger Documentation, version 5.0, April 1979.
Debugger: Extended Features, Karlton, Kolakin & Malasky, July 2, 1979.

CoPilot is just like XDebug, only different

Most of the functions and features of CoPilot 1.0 are the same as those of version 5.0 of the normal Mesa Debugger on which it is based. Users should be familiar with debugging Mesa programs before attempting to use CoPilot. This document will describe only the differences between CoPilot and the Mesa debugger.

Volume, volume, who's got the volume?

CoPilot, like the Mesa debugger, runs in a separate address space from the client program being debugged. In addition, CoPilot runs in a separate Pilot environment using a different logical volume as its system volume. Pilot will not allow the client program to access the CoPilot volume thereby preventing a diseased client program from infecting CoPilot. Pilot allows CoPilot to access the client volume only through a low-level internal interface and will not be confused if the client volume becomes malformed.

Debug Window

The Debug window receives typein when the cursor is not in any window or when the cursor is in a window which does not want the typein itself (e.g. a source window which is not empty).

Menu Commands

Alter Bitmap

is a no-op.

Commands

C0remap [confirm]

not implemented.

↑Debug [confirm]

always takes you the the debugger used to debug CoPilot. The *debugger nub* is not implemented. Not normally used by clients.

Signal and Error messages

*** Debugger Bootloaded! ***

not applicable.

*** Fatal System Error (Punt) ***

not applicable.

!Addressfault; page = nnn

During the execution of a command, CoPilot attempted to read or write a location in the client's page nnn which was not mapped.

!Writeprotect; page = nnn

During the execution of a command, CoPilot attempted write into a location in the client's page nnn which was write protected.

Herald Window

In a small window at the top of the screen CoPilot displays its version, the current date and time, and the number of free pages remaining on the CoPilot volume (*not* the client volume). This window cannot be moved, but it can be covered by other windows. The window manager menu is available in this window, but only the **Top** and **Bottom** commands have any effect.

Source Window

In addition to the name of the file, the name stripe at the top of a source window may contain "G: nnnnnB". This means that the source window "knows" that the global frame nnnnnB is associated with the source file (see **Set Break**).

Load

If the current selection is a number, it is taken to be a global frame and the corresponding source file is loaded. An empty source window may be loaded by typing a file name into the window followed by **ESC**. If a window is not empty, typein is directed to the debug window.

Set Break, Set Trace, Clear Break

If the source window knows the global frame associated with the source file, the current context is irrelevant.

Directory Tool

The directory tool will list and delete files from the CoPilot volume.

Delete!

takes the current selection as a file name and deletes the associated file, if possible.

List!

prints out all file names that match the filter specified in the `Pattern` parameter item. Filters may include `*` and `#` characters with the usual semantics.

Fetch

Fetch is a standard part of CoPilot. It is the only way to get files (sources, symbols, etc.) onto the CoPilot volume for debugging. There are a few differences from the Mesa 5.0 Fetch.

Pages!, Delete!

These commands are not available. They are superseded by the Herald Window and the Directory Tool respectively.

Retrieve!

Fetch will refuse to overwrite a file if doing so might invalidate data maintained by other parts of CoPilot. Common examples are source files in an open source window or symbol files related to the current context.