


Retro desktops for retro computers

From 8-bit to Atari, Amiga & friends

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Little boxes from the 80s

- 8bit CPU (6502, z80...)
- Up to 64kB of RAM, sometimes more (banking)
- Text display (≤ 40 columns); 
- Graphics (no standard, lots of restrictions)
- Sound: synth chip (YM, SID...)
- Cassette tape, floppy if you're lucky; RS-232
- Usually running Microsoft BASIC

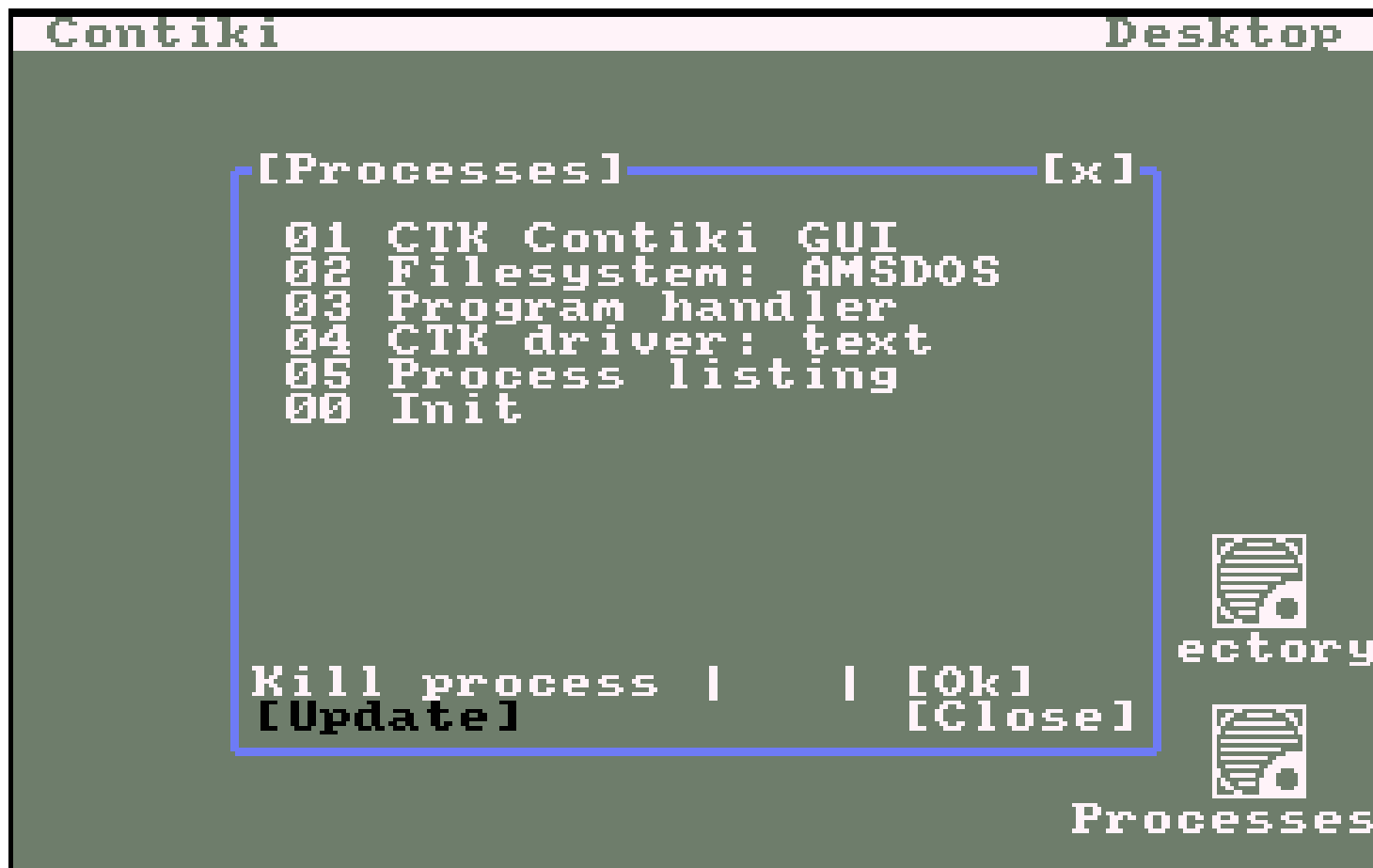


Contiki [BSD]

- Started as a multitasking OS for C64
- Ported to many other 8bit ([1.x](#); [fork & archive](#)),
 - then to sensor nodes (IoT) for 2.0
- Protothreads (switch()-based coroutines)
- IPv4 & v6 (Cisco-certified!)
- “Graphical” User Interface (CTK) + VNC server
- Web browser, IRC...



Contiki



Contiki – about.c

```
#include <string.h>
#include "contiki.h"
#include "ctk/ctk.h"
#include "lib/petsciiconv.h"

static struct ctk_window aboutdialog;
static struct ctk_label aboutlabel1 = {CTK_LABEL(2, 0, 28, 1, "The Contiki Operating System")};
static struct ctk_label aboutlabel2 = {CTK_LABEL(3, 2, 28, 1, "A modern, Internet-enabled")};
static struct ctk_label aboutlabel3 = {CTK_LABEL(6, 3, 20, 1, "operating system and")};
static struct ctk_label aboutlabel4 = {CTK_LABEL(6, 4, 20, 1, "desktop environment.")};

static char abouturl_petscii[] = "http://www.sics.se/~adam/contiki/ ";
static char abouturl_ascii[40];
static struct ctk_hyperlink abouturl = {CTK_HYPERLINK(0, 6, 32, "http://www.sics.se/~adam/contiki/",
abouturl_ascii)};
static struct ctk_button aboutclose = {CTK_BUTTON(12, 8, 5, "Close")};

PROCESS(about_process, "About Contiki");
AUTOSTART_PROCESSES(&about_process);

static void about_quit(void)
{
    ctk_dialog_close();
    process_exit(&about_process);
    LOADER_UNLOAD();
}
```



Contiki – about.c

```
PROCESS_THREAD(about_process, ev, data) {
    unsigned char width;
    PROCESS_BEGIN();
    width = ctk_desktop_width(NULL);
    strcpy(abouturl_ascii, abouturl_petscii);
    petsciiconv_toascii(abouturl_ascii,
sizeof(abouturl_ascii));
    if(width > 34) {
        ctk_dialog_new(&aboutdialog, 32, 9);
    } else {
        ctk_dialog_new(&aboutdialog, width - 2, 9);
    }
    CTK_WIDGET_ADD(&aboutdialog, &aboutlabell1);
... CTK_WIDGET_ADD(&aboutdialog, &aboutlabel4);
    if(width > 34) {
        CTK_WIDGET_ADD(&aboutdialog, &abouturl);
        CTK_WIDGET_SET_FLAG(&abouturl,
CTK_WIDGET_FLAG_MONOSPACE);
    } else {
        CTK_WIDGET_SET_XPOS(&aboutlabell1, 0);
... CTK_WIDGET_SET_XPOS(&aboutclose, 0);
    }
    CTK_WIDGET_ADD(&aboutdialog, &aboutclose);
    CTK_WIDGET_FOCUS(&aboutdialog, &aboutclose);
    ctk_dialog_open(&aboutdialog);
```

```
while(1) {
    PROCESS_WAIT_EVENT();
    if(ev == PROCESS_EVENT_EXIT) {
        about_quit();
        PROCESS_EXIT();
    } else if(ev ==
ctk_signal_button_activate) {
        if(data ==
(process_data_t)&aboutclose) {
            about_quit();
            PROCESS_EXIT();
        }
    } else if(ev ==
ctk_signal_hyperlink_activate) {
        if((struct ctk_widget *)data ==
(struct ctk_widget *)&abouturl) {
            about_quit();
            PROCESS_EXIT();
        }
    }
}
PROCESS_END();
}
```



Many others (but mostly non-free)

- **SymbOS** (Amstrad/Schneider CPC&PCW, MSX, Enterprise 64/128) [non-free]
- **NitrOS9** [GPLv2] + MShell [unknown] (Tandy CoCo & Dragon)
- **FUZIX** but just a CLI (MSX, Amstrad...) [GPL]




16/32bit CPUs

- 68000 - 68060
 - Atari ST/Falcon, Amiga, Mac, NeXT, x68000...
- ARM
 - Archimedes, RISC-PC
- ...
- 8086
 - PC



16/32bit platforms

- Mouse 
- Graphics: up to VGA, 8 to 16bpp
- Sound: stereo DAC
- DMA
- Floppy, sometimes hard-disk
- Networking (RS-422, RS-232 (SLIP), Ethernet)



“Of course, it runs NetBSD!”

- NetBSD ported to most old archs & machines
 - NeXT, Mac, Atari, Amiga...
- Requires an MMU and enough RAM
- You should be able to get X11 😎



GNU/Linux?

- Used to be available on Amiga, Atari...
- 68k arch mostly unmaintained
- Maybe still available in Debian?
 - Stopped at 4.0



RISC-OS Open [non-free(NC)]

- For RiscPC, [Raspberry-Pi](#)
- Non-free, but sources available
- [Apps](#) database (mentions the license)



Atari hardware

- ST (68000), TT & Falcon (68030)...
- Old clones: HADES...
- [Firebee](#) (ColdFire CPU)
- [MiST](#) (FPGA SoC)
- [ARAnyM](#) Emulator (SDL, UAE core) [GPLv2]
 - “Atari Running on Any Machine”



Atari OSes

- [EmuTOS](#) [GPLv2] ROM replacement
- MiNT: MiNT is Not TOS [BSD/(L)GPL]
 - TOS-compatible unix-like OS
 - Preemptive multitasking
 - Now FLOSS
 - XaAES + GEM desktop
 - Several distros ([FreeMiNT](#), [SpareMiNT](#)...)
- Maybe Haiku someday?



Atari apps

- [Ports](#) by Patrice Mandin
- GFA apps by Rajah ([index](#), [files](#), [blog](#)) [NC]
- [Gfalist](#) dumps GFA tokenized file to listing
- App authors not always interested in putting a FLOSS license on their code 😞
 - Either “DWTFYW” or NC so non-free



Atari dev references

- <http://vincent.riviere.free.fr/soft/m68k-atari-mint/>
- <http://tammatt.mbnet.fi/hatari/devel.shtml>
- <http://dev-docs.atariforge.org/>
- <http://info-coach.fr/atari/software/development.php>
- <http://www.voidbred.com/blog/2014/09/programming-the-atari-st-20-years-later/>



Amiga hardware

- Axxxx: 68000 or 68EC030 (no MMU)
 - Need accelerator card for NetBSD or GNU/Linux
 - New [Vampire 2](#) accelerator “68080” FPGA core
 - But no MMU and not open ☹️
- [Minimig](#) (FPGA SoC) [GPL]
- UAE emulator & its forks
- PPC machines ([Sam460](#), x1000, x5000)
 - But that’s cheating!



AROS [APL/GPL]

- Amiga ~~Replacement~~ Research OS
- Source & binary compatible with AmigaOS
- Supports 68k & PPC
- Also ported to x86
- Includes a Workbench



Amiga apps

- [Aminet](#) (doesn't mention licenses)
- “[Amiga](#)” search on Github?
- [HippoPlayer](#) sources just released today [MIT]



Amiga dev references

- “Découverte de la Programmation AmigaOS”
- wiki.amigaos.net



Wait, what about the PC?

- FreeDOS + FreeGEM
- 386BSD (2.0 opensourced in 2016)
- Calmira II (Win95-like shell for Win 3.x) [GPL]



MultideskOS

- Universal OS from French dev Jayce
- It should run on any machine
- But we're still waiting for it
- `</troll>`



Portable toolkits & apps

- Game libs: [Allegro](#); [SDL 1.2](#) (2.0 win/osx/android only)
- Curses implementations: [ncurses](#), [PDCurses](#) [MIT/PD]
- [Portlib](#) [no license??]; [NativeFileDialog](#) [zlib];
- [LibGit2](#) [GPLv2]
- Simple apps to port:
 - [QEmacs](#) [LGPL] by Fabrice Bellard (QEMU, Ffmpeg...)
 - [Rhapsody IRC](#) [GPL] (curses)
 - [OpenCubic Player](#) [LGPL] (SDL); [MilkyTracker](#) [BSD] (SDL)



NetSurf [GPLv2]

- Web browser (HTML5+CSS) for RISC-OS
- JS support in the works
- Ported to
 - GNU/Linux + GTK or framebuffer
 - Haiku
 - Atari MiNT
 - AmigaOS
 - OSX, Win32 (& ReactOS)



NetSurf toolchains

- Nice folks maintain an SDK for all NS platforms
- Latest cross-GCC & runtime
- Zlib, iconv, expat, libpng, openssl, freetype...



Thanks for watching!

- See also “Free your antiques” (RMLL 2014)
- Questions?

