

PARCP

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About PARCP

- PARCP = PARAllel CoPy – program for file transfer between two computers across their parallel ports
- Contrary to ST-Trans from Atari can connect not only ST-ST but also ST-PC and even PC-PC
- Main focus: **SPEED** over 100 kB/s, 10x faster than „null modem“ over serial ports, faster than all other competitors thanks to its full 8-bit transfer and highly optimized assembler code

History

- Official history of PARCP development is documented in HISTORY.TXT file (part of each release)
- First documented version 0.1 alpha is from July **1996** – already managed to drive both ST and PC parallel ports
- First idea of creating PARCP originated in frustration from ST-Trans bugs and half-baked nature of HDD Daemon 2.0 (Hi Lukas :-)

PARCP origins on 520 ST?



Real roots of PARCP !



XL - ST problem in 1989

- I got my first computer, Atari 800XL in 1987
- All my friends also wanted Atari like I had
- Their parents started to buy them Atari – ST !
- I had XL with 5,25“ floppy, they had ST with 3,5“ floppy – how to exchange data?
- Thus I started developing a PARCP predecessor for connecting XL-ST

XL – ST communication

- XL had its cassette port that I didn't know
- XL also has two joystick ports – each can read four directions and one fire button
- ST had a parallel port and two joystick ports
- And we had just Omicron BASIC and very limited information about the ST hardware, and rather limited information about the XL hardware
- What ports to use for interconnecting them?

XL – ST wiring

- We needed to transfer data from XL to ST
- Crazy idea: turn the direction of Atari XL joystick ports from INPUT to OUTPUT
- Another crazy idea: turn the direction of Atari ST parallel port from OUTPUT to INPUT
- Final state: 8 directions of two XL joystick ports are connected to 8 pins of ST parallel port => full 8 bit transfer possible!

XL – ST comm software

- Written in assembler on XL and probably in Omicron Basic on ST
- Managed to copy single files
- Very fragile – sensitive to timing as handshaking was not fully implemented and the communication „protocol“ was basically non-existent

Does it still exist?

- The XL software is somewhere backed up, maybe, no idea where
- The ST software is most probably lost because it was programmed on friend's computer and we have no way of copying from ST to XL :-)
- Short answer: it's long time lost, R.I.P.

PARCP Competitors in 1996

- ST-Trans
- HDD Daemon
- PLIP driver of MiNT-Net
- PC2Am on Amiga

Competitor: ST-Trans

- © 1992 Atari
- probably part of ST-Book standard software
- Can copy files between ST and ST over parallel „null-modem“ like cable
- Decent GEM interface
- Full of very annoying bugs

Competitor: HDD Daemon

- IIRC ST-PC only, not ST-ST
- Decided to hook into TOS routines to provide kind of network feeling – PC drives appear mapped to TOS logical drives, IIRC
- IIRC not very stable, slow, uni-directional (PC drives in ST, not the other way)

„Competitor“: PC2Am

- Amiga software
- © Michal Kara AKA Lemming
- 100% assembler, quite fast
- Functionally similar to HDD Daemon

Competitor: MiNT-Net PLIP

- Linux created SLIP – IP over Serial Line
- It worked so PLIP was created as well – IP over Parallel Line
- PLIP was ported to MiNT XIF driver
- Incompatible with PLIP on Linux PC, IIRC
- Slow because interrupt driven, limited to Atari computers

PARCP is application, not driver

- PARCP is intentionally not hooked into operating system so it is unable to „map“ logical drives of one computer to another
- PARCP's main aim is maximal speed thus interrupt driving was not possible (too large overhead)
- Another PARCP goal was to be universal – not limited to certain combination of platforms or operating systems

PARCP philosophy

- Client – Server architecture
- Client is the computer you sit at
- Server is the other computer that serves files/folders to client
- Client/Server is not limited to certain platform: Atari ST can be both client or server, just like PC.

PARCP basic operation

- Hook up two computers with a PARCP cable
- Decide which one will be PARCP server and run PARSERVE there
- Sit down to the client computer and run PARCP there
- Start copying/moving/deleting/viewing or editing files and copying/moving/deleting or creating folders, or executing local/remote programs

PARCP modes of operation

- Interactive, with two different user interfaces
- Non-interactive, drag&drop or script files

PARCP user interfaces

- The original interface was highly influenced by Internet and FTP client
- Soon, full screen TUI ála Norton Commander was added (in documentation called ParShell = PARCP Shell)

PARCP Shell

The screenshot shows the PARCP Shell interface with a blue background and white text. The window title is "MS DOS parcp". The main content is divided into two panels: "Client [pc/MS-DOS]" and "Server [atari/MiNT]".

Client [pc/MS-DOS] c:/

<Program Files	<DIR> 1997/02/26
<Projekty	<DIR> 1997/10/23
<SOYO	<DIR> 1997/09/02
<Spread25	<DIR> 1997/11/05
<ST	<DIR> 1997/02/06
<Temp	<DIR> 1998/01/08
<TMP	
<TOOLS	
<VARBA	
<wincmd	
<WINDOWS	<DIR> 1998/01/13
<WinElvis	<DIR> 1997/07/23
<WWW	<DIR> 1997/11/27
<XL	<DIR> 1997/01/16
<YAPW	<DIR> 1997/10/31
<Atari800-0.8.2	<DIR> 1998/02/04
<DJGPP.200	<DIR> 1997/02/22

0 kB in 3 selected files

Server [atari/MiNT] /e/home/root/

<..	<DIR> 1998/02/07
<access	<DIR> 1997/12/05
<ace	<DIR> 1998/01/31
<at	<DIR> 1998/02/04
<atari	<DIR> 1998/01/18
<atari803	<DIR> 1998/02/04
	998/02/05
	997/12/05
	998/02/01
	997/12/05
<mintlibs-patch	<DIR> 1997/12/05
<mntlib46020	<DIR> 1997/12/05
<nc	<DIR> 1997/12/05
<ncp	<DIR> 1997/12/05
<parcp	<DIR> 1998/01/26
<pl47	<DIR> 1997/12/05
<Program Files	<DIR> 1998/02/07

608 kB in 50 files, 144801 kB fr

F1=Help F2=FTP F3=View F4=Edit F5=Copy F6=Move F7=MkDir F8=Delete F9=Menu F10

PARCP non-interactive

- PARCP Client copies all files found on command line. This allows for Drag&Drop
- PARCP can interpret its „FTP/CLI“ commands written in plain text files (one command per line). Thus it has scripting capabilities.

PARCP is shareware

- In 1996 shareware was a reasonable world wide distribution model of commercial software
- PARCP is available as fully functional program with few limits that could be unlocked
- So basically a keyware, some would even say cripple ware but that's not true in PARCP case
- Registered users get all future updates for free

Does shareware model work?

- Started in 1997 – 3 registered users
- Between 1998-2002 about 50 reg users per year
- CyberSTrider Denesh Bhabuta and J.Kock in Sweden are tunnelars
- With end of active development decline of registrations became very apparent: 2003 = 14, 2004 = 6, 2005 = 4, 2006 = 2, ... 2013 = 1
- Last release 3.90 in 2002, few closed betas in 2005/2006
- 2014: break point – is project dead?

PARCP Resurrection

- In 2014 I had no parallel port on my notebook so I couldn't continue developing PARCP even if I wanted to.
- Existing users of PARCP asked if it was possible to create PARCP-like software over USB ports between two PCs?
- A sudden idea on June 26, 2014: to develop an interface that would allow for connecting between USB and parallel ports: PARCP-USB adapter.

PARCP-USB



PARCP-USB

- PARCP-USB adapter is specifically designed and developed for use with PARCP
- No existing “parallel port over USB” devices can replace it while achieving the full PARCP speed
- PARCP-USB plugs into parallel port of a computer (ST or legacy PC) and offers USB socket that you can connect to any PC with USB using regular USB-mini USB cable
- PARCP-USB is powered from PC via USB

PARCP-USB development

- First trial: Arduino Pro Mini and USB using bit banging – max. speed limited to 30 kB/s → thrown away

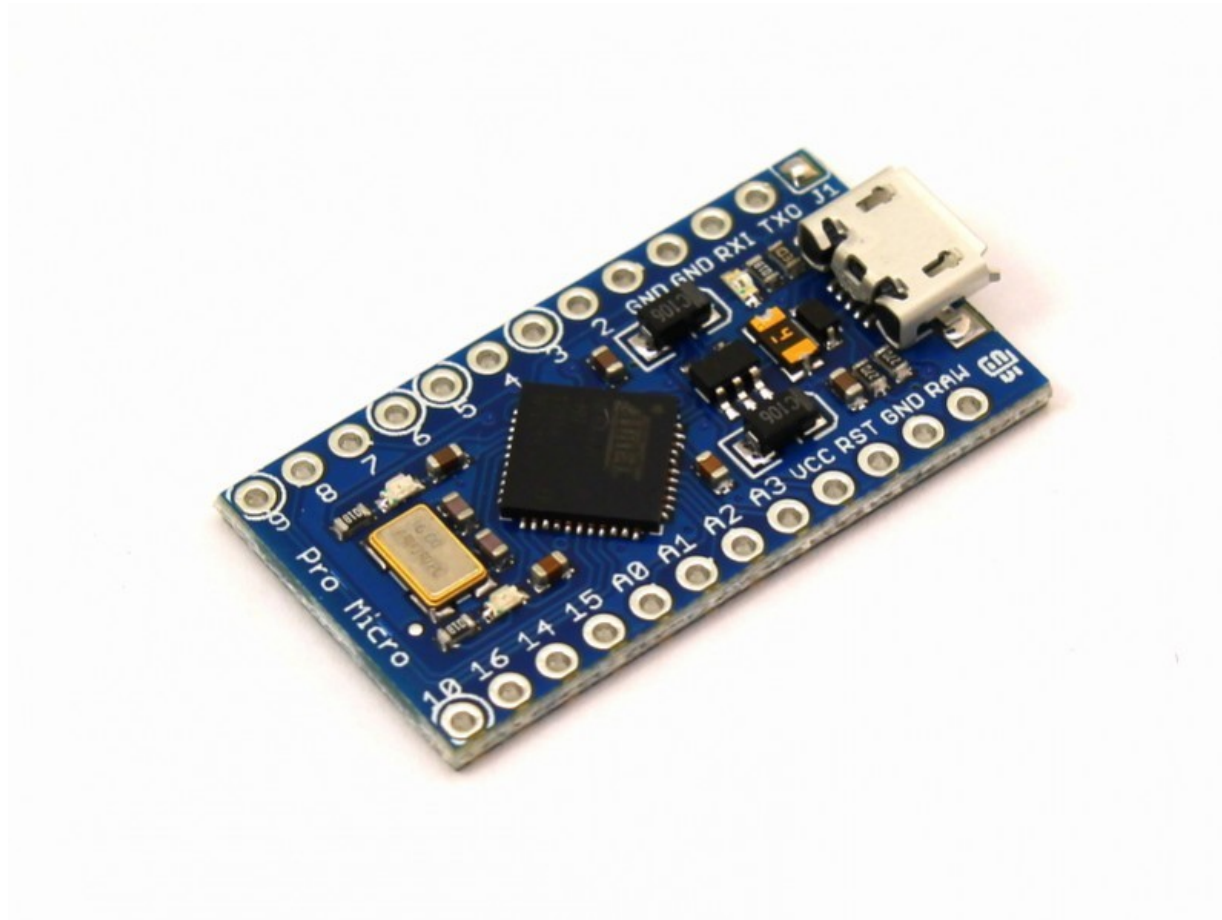
Arduino Pro Mini



PARCP-USB development

Second trial: Arduino Pro Micro with HW USB.
Works fine but does not fit into selected cover.

Arduino Pro Micro

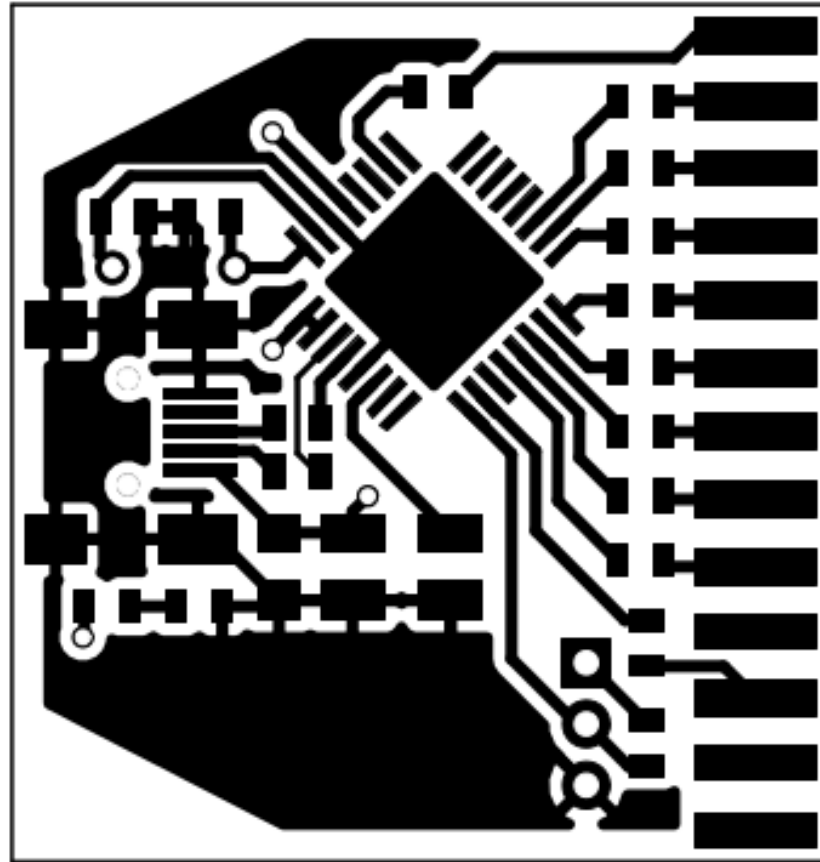


PARCP-USB development

Then Ctirad encouraged me to develop my own PCB thus affected the final look of PARCP-USB.

Thank you, Ctirad!

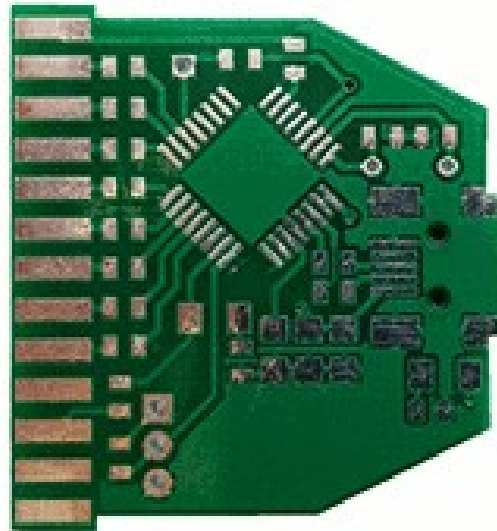
PCB that fits to standard case



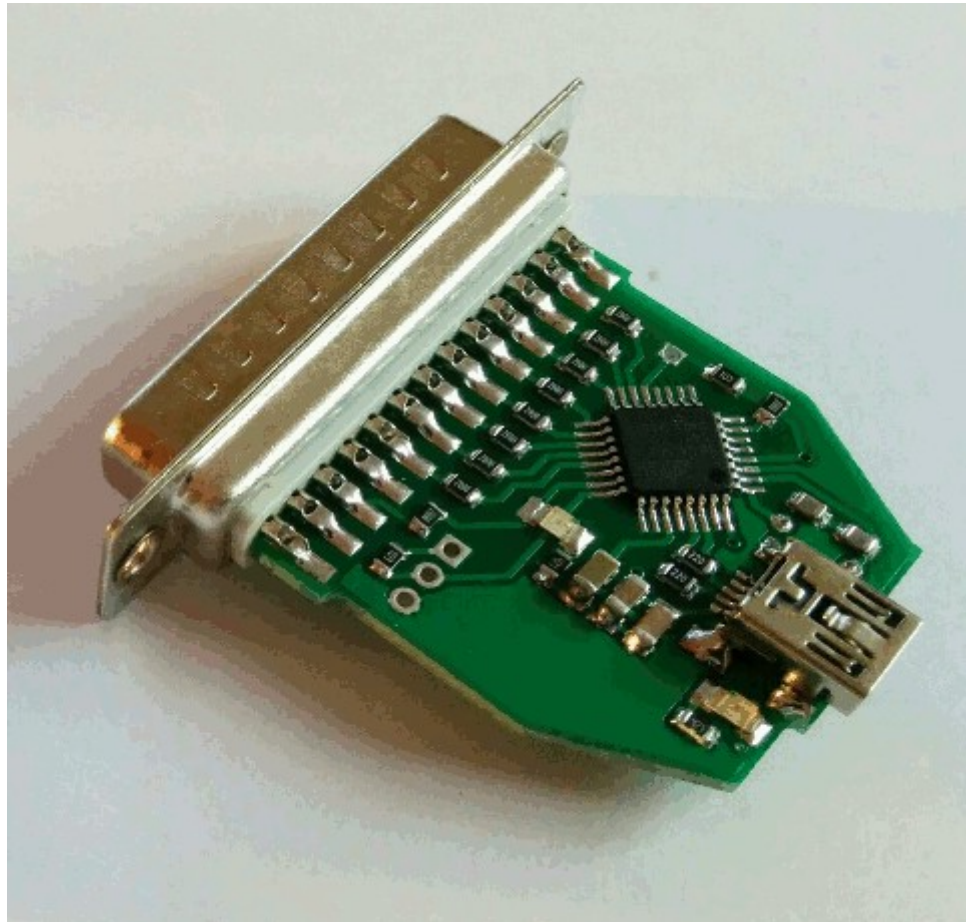
PARCP-USB final look



PARCP-USB inside



PARCP-USB assembly



PARCP-USB features

- Built using fast 16 MHz ATMEGA ucontroller
- Offers USB 2.0 interface
- Implements HID interface → no need for driver in host operating system
- Understands PARCP protocol, buffers chunks of data
- Supports max speed of PARCP – over 100 kB/s
- Contrary to plain PARCP cable is 100% safe (no need for PAR_IN.PRG)

PARCP-USB experience

- Works flawlessly under Linux and MS-Windows
- More than 50 users world wide, very positive feedback
- Truly Plug'n'Play experience
- The only issue can be vague mini USB connection

PARCP in 2014

- PARCP-USB support required quite some updates to PARCP software from 1990'
- Native MS-Windows support was developed
- Native Raspberry Pi (ARMv6) binary available
- Numerous old bugs were fixed
- New releases 3.95+ appeared starting in November

PARCP 4.0 in 2015

- Major new release in March 2015
- Another ton of critical bugs fixed
- New CLI command added: EXEC
- Mac OS X support is almost finished
- Starting to work on mouse support in ParShell

PARCP in the future

- Public promise: PARCP will be released as free software when another 47 PARCP-USB buyers are found
- PARCP source code will be uploaded to GitHub and ports to new platform will hopefully appear soon
- Imagine PARCP on your NAS (Synology), on your WiFi router (OpenWRT), on your Android smart phone, tablet, TV, refrigerator etc...

PARCP as network driver?

Old PARCP cable is not safe for networking

New PARCP-USB is 100% safe thus networking is possible. Let's see what open source can do.

Thank you

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