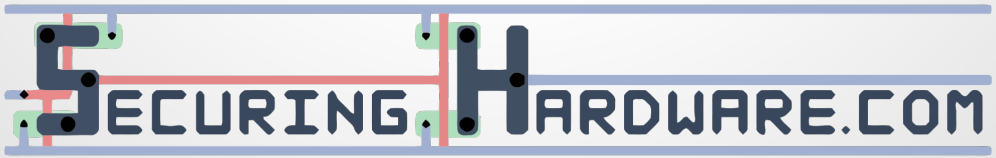
Tools of the NSA Playset

Ruxcon 2014
Joe FitzPatrick
Mike Ryan



What is the NSA Playset?

[UNCLASSIFIED]

HACKRF

Software Defined Radio Peripheral

(U//FOUO) HACKRF is a Software Defined Radio peripheral capable of transmission or reception of arbitrary radio signals from 10 MHz to 6 GHz.

12/31/13

(U//FOUO) HackRF One with optional enclosure

(U//FOUO) HACKRF is an open source hardware platform designed to enable education, experimentation, and deployment of Software Defined Radio (SDR) technology.

(U//FOUO) HackRF One Features:

- 10 MHz to 6 GHz operating frequency
- half-duplex transceiver
- portable
- Hi-Speed USB 2.0, bus powered
- low cost
- open source
- works with GNU Radio
- 20 MHz bandwidth
- 8 bit resolution
- external clock input and output

(U//FOUO) Applications:

- spectrum analysis
- vector signal analysis
- vector signal generation
- reverse engineering
- spectrum sensing
- wireless security testing
- radio research and development

(U//FOUO) HACKRF makes cutting edge SDR technology available to everyone. Now you can build any radio you want.

Status: Available Q1 2014
http://greatscottgadgets.com/hackrf/

Unit Cost: $300 estimated

POC: [redacted], S32242, [redacted], [redacted]@nsa.ic.gov

HackRF is open source hardware and software. Anyone may use it, build it, or modify it, not just the NSA.

[UNCLASSIFIED]

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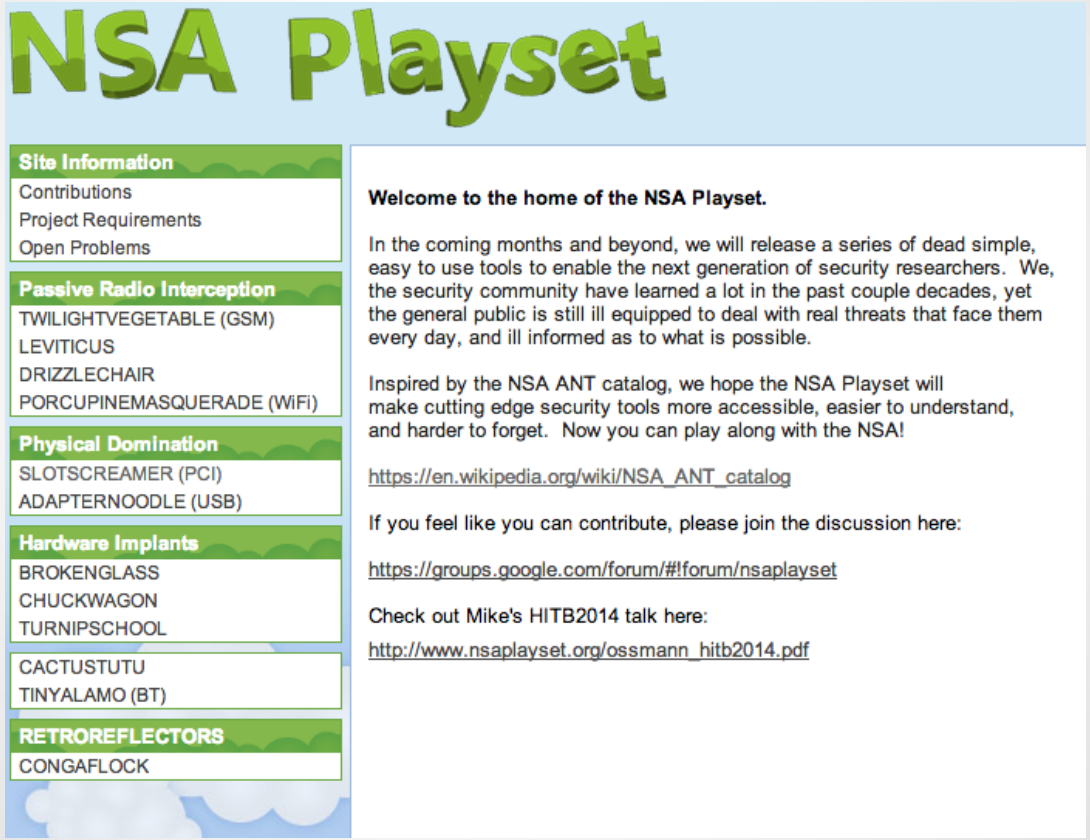
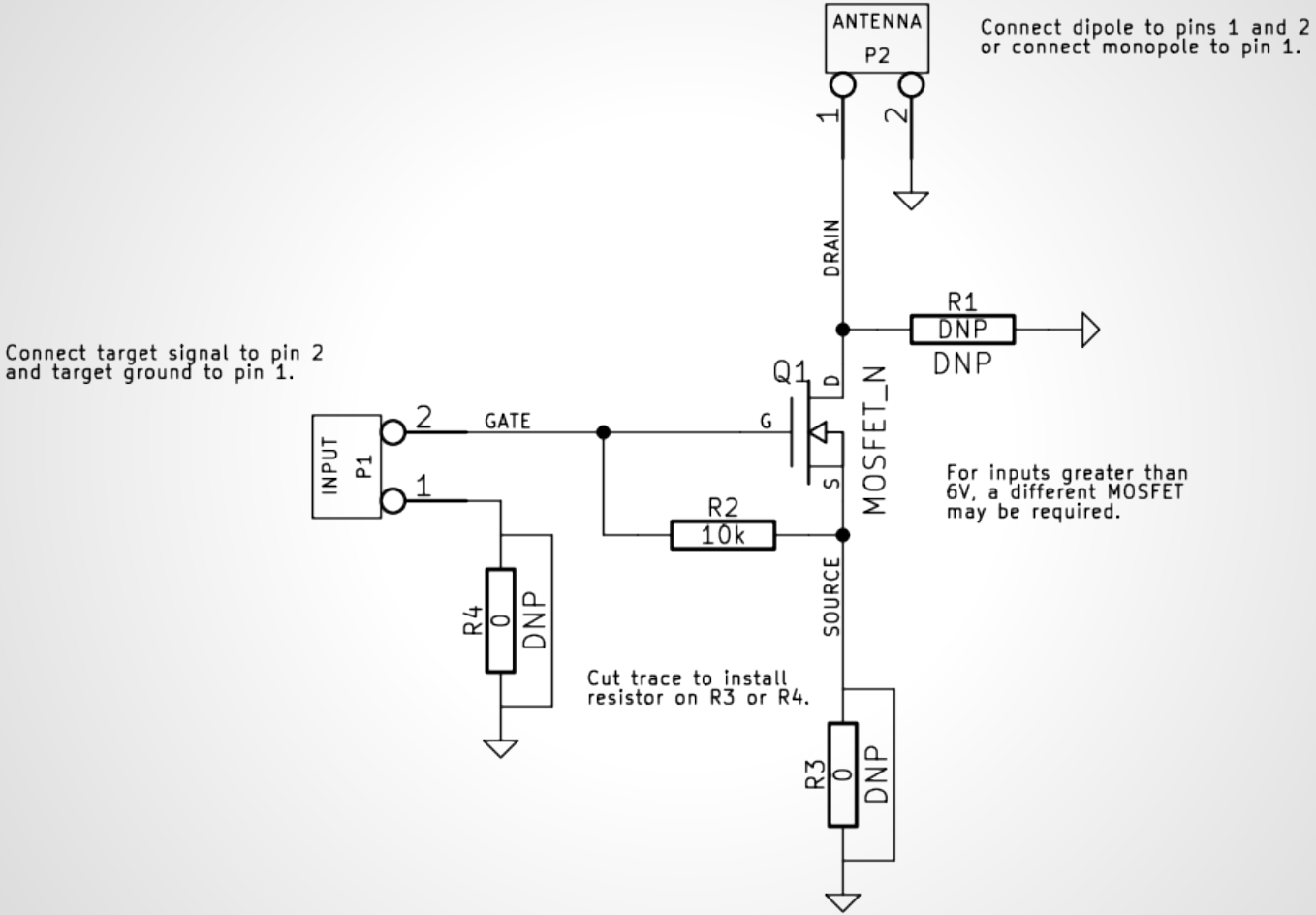
nsaplayset.org



NSA Playset Price Sheet

CONGAFLOCK - <$1

A 'Retroreflector', which is a passive device that reflects differently when a monitored wire changes


ANTENNA
P2
1
2
Connect dipole to pins 1 and 2
or connect monopole to pin 1.
DRAIN
R1
DNP
DNP
Connect target signal to pin 2
and target ground to pin 1.
Q1
D
G
S
MOSFET_N
INPUT
P1
2
GATE
1
R2
10k
For inputs greater than
6V, a different MOSFET
may be required.
SOURCE
R4
0
DNP
Cut trace to install
resistor on R3 or R4.
R3
0
DNP

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NSA Playset Price Sheet

TWILIGHTVEGETABLE - $50

Custom Boot environment for basic GSM monitoring

- Sandisk 16G Extreme USB
- NooElec RTL-SDL dongle + antenna

TWILIGHTVEGETABLE

3D

NSA Playset Price Sheet

LEVITICUS - $50

OsmocomBB Phone for use with TWILIGHTVEGETABLE

- Motorola C139 phone
- Osmocom Cable

LEVITICUS

3D

NSA Playset Price Sheet

DRIZZLECHAIR - $100

A5/1 Rainbow Tables + Kraken for use with TWILIGHTVEGETABLE

- WD Elements 2TB USB 3.0 Hard Drive

DRIZZLECHAIR

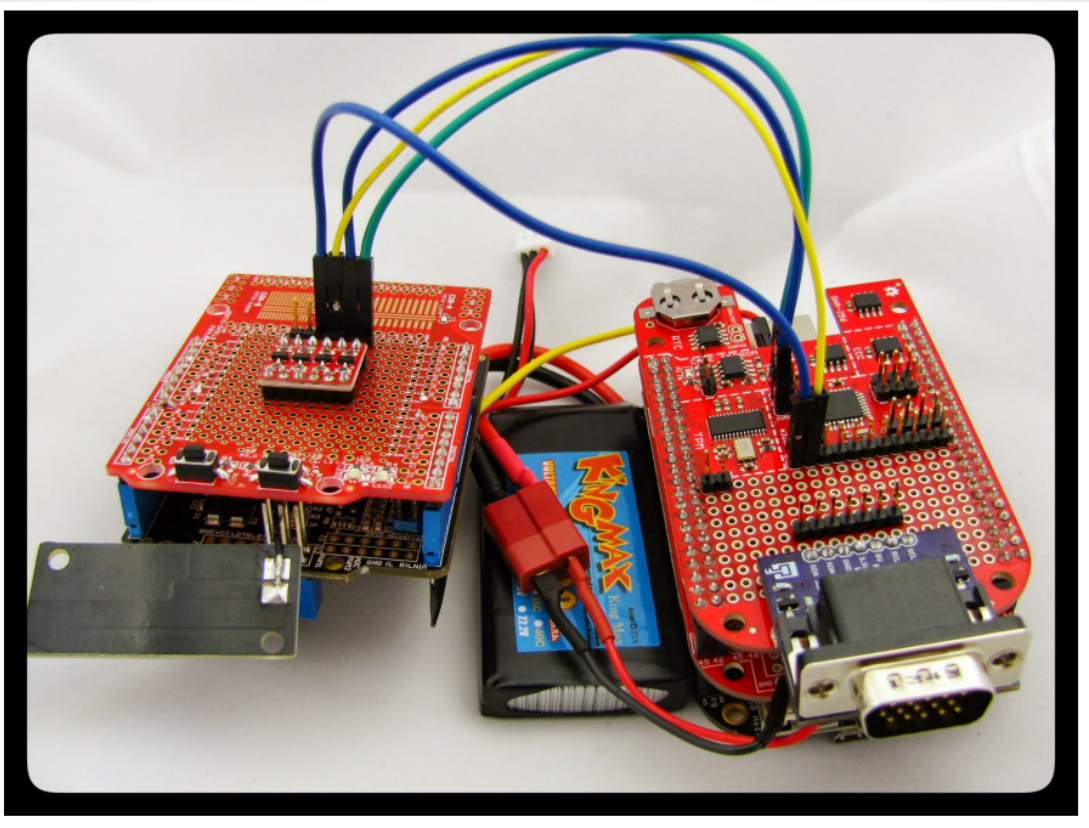
3D

NSA Playset Price Sheet

CHUCKWAGON - $25

I2C implant

CHUCKWAGON



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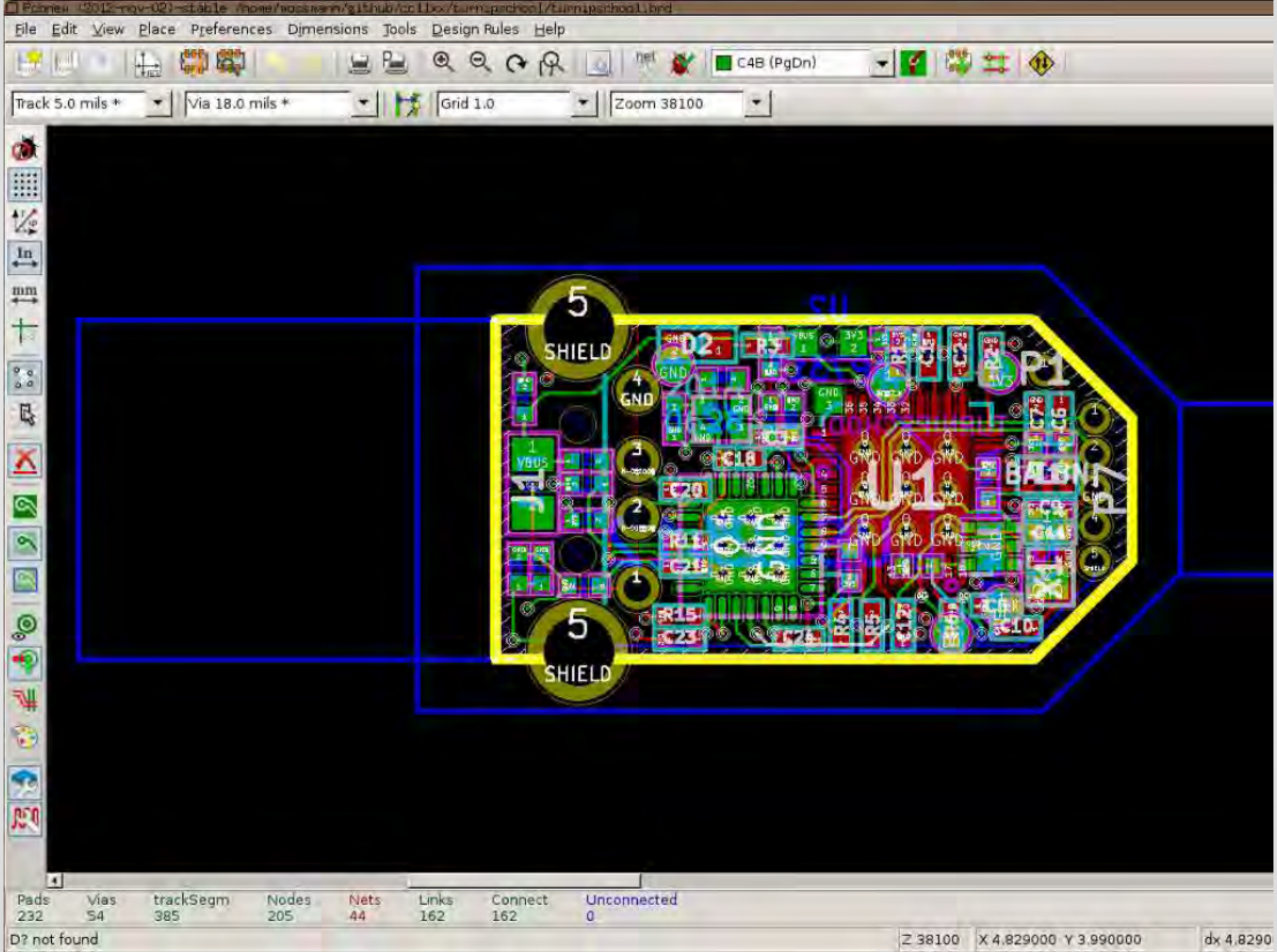
Upcoming Toys in the NSA Playset

NSA Playset Price Sheet

FLEABRAIN - $10

USB Cable implant that can store and transmit USB data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C4B (PgDn)
Track 5.0 mils *
Via 18.0 mils *
Grid 1.0
Zoom 38100
SHIELD
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VBUS
U1
P1
BALUN
C18
C20
R15
C23
C10
Pads 232
Vias 54
trackSegm 385
Nodes 205
Nets 44
Links 162
Connect 162
Unconnected 0
D? not found
Z 38100
X 4.829000 Y 3.990000
dx 4.8290

3D

NSA Playset Price Sheet

DUCHESSRIDE - $45

USB Implant that allows for USB middling

DUCHESSRIDE

Our Favorite NSA Playset Toys:

NSA Playset Price Sheet

TINYALAMO - $10

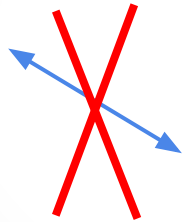
Bluetooth keystroke surveillance and injection

TINYALAMO

+ PyBT


Barbie
80 Learning activities
Try Me
Barbie
Barbie
Barbie


NATIONAL SECURITY AGENCY
UNITED STATES OF AMERICA




Backspace
Tab
Caps Lock
Enter
Shift
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Escape
Insert
Home
Print Screen
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Down

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TINYALAMO Demo!

NSA Playset Price Sheet

SLOTSCREAMER - $100

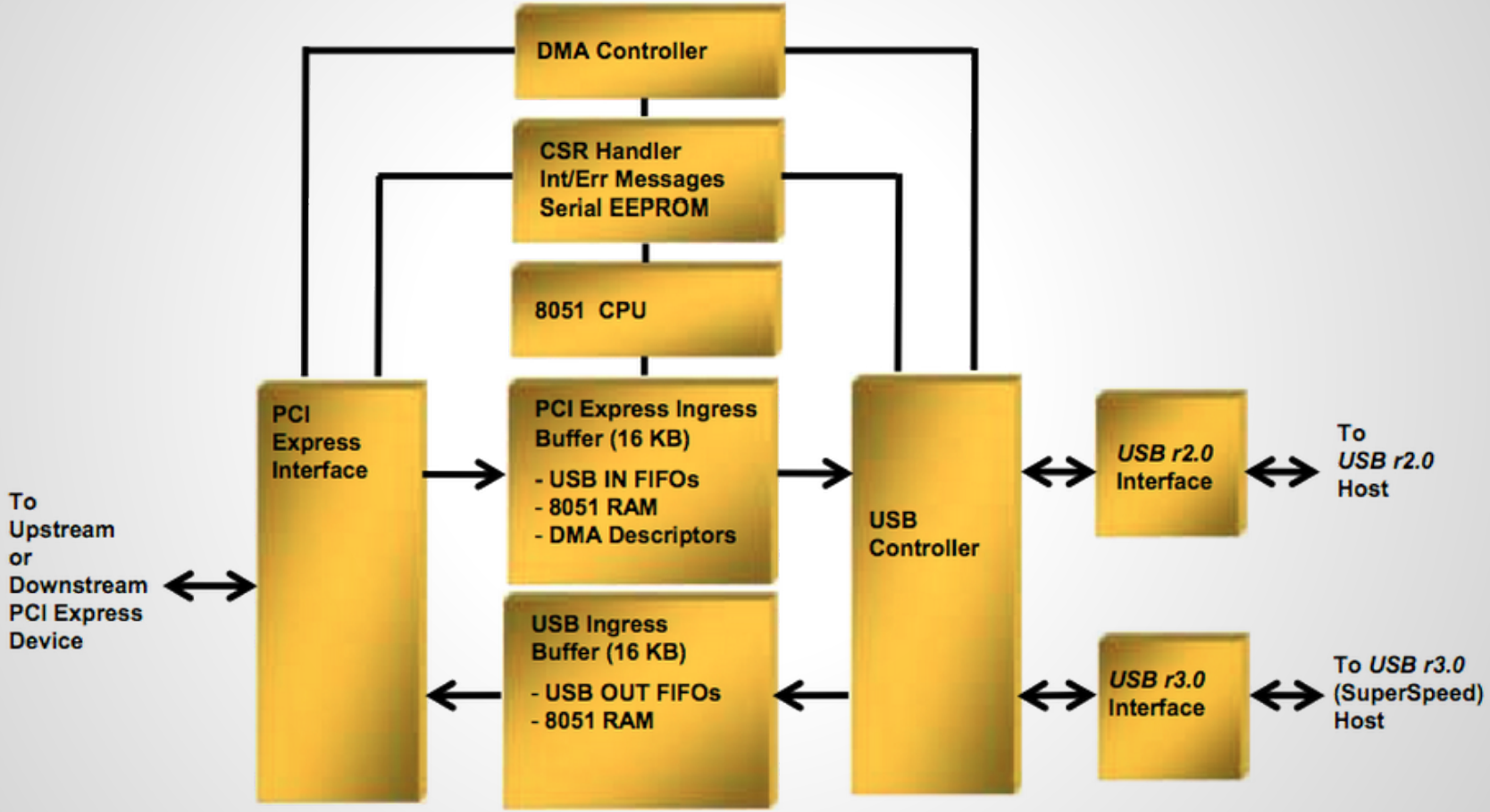
PCIe Attack Platform

- USB3380-AB Evaluation Board with custom firmware

SLOTSCREAMER Hardware

http://www.hwtools.net/PLX.html

Figure 1-1. USB 3380 Block Diagram



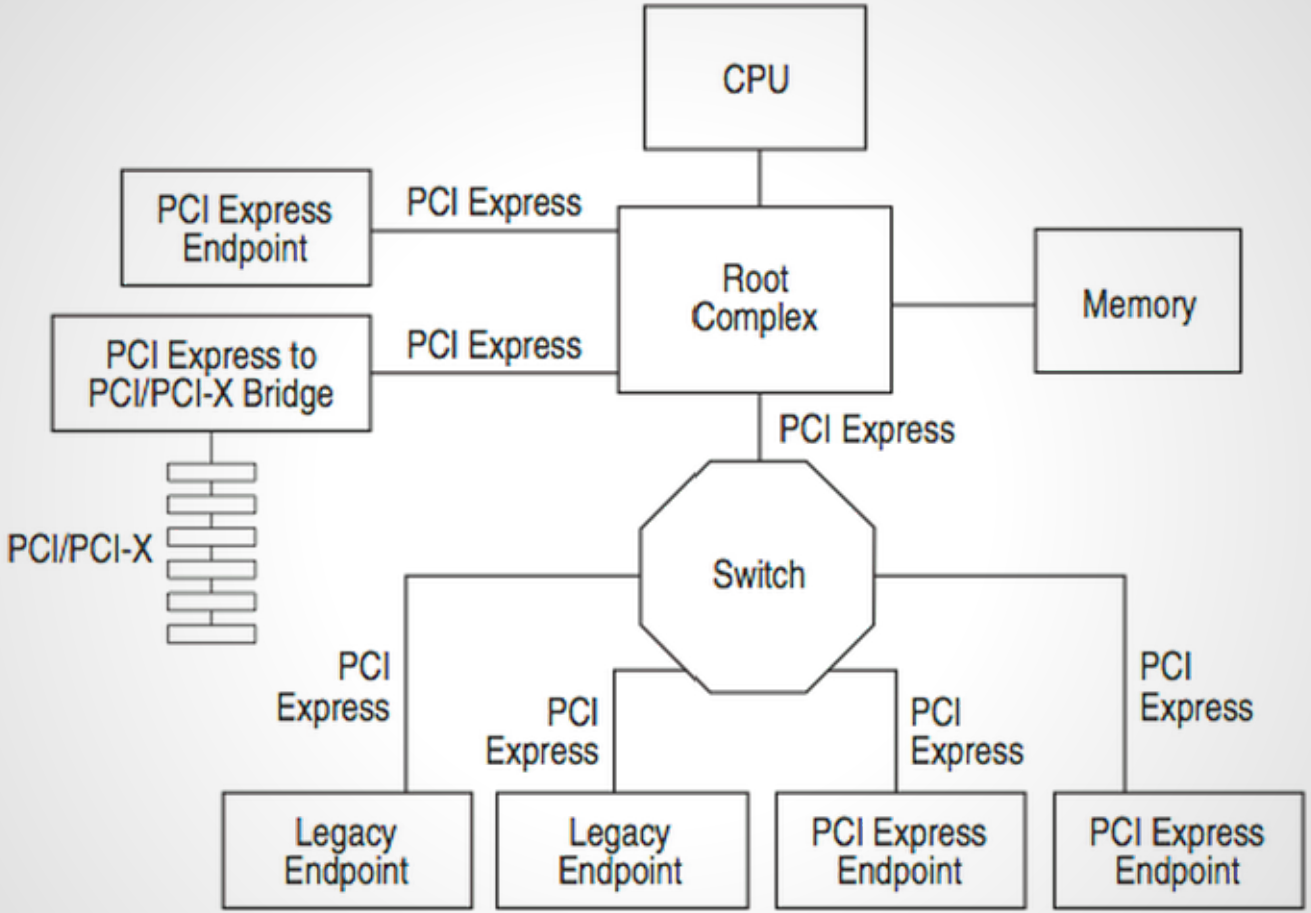


Diagram: PCIe 2.1 specification

NSA Playset Price Sheet

HALIBUTDUGOUT - $300

PCIe Attack Platform

- SLOTSCREAMER enclosed in a Thunderbolt Enclosure

HALIBUTDUGOUT

3D

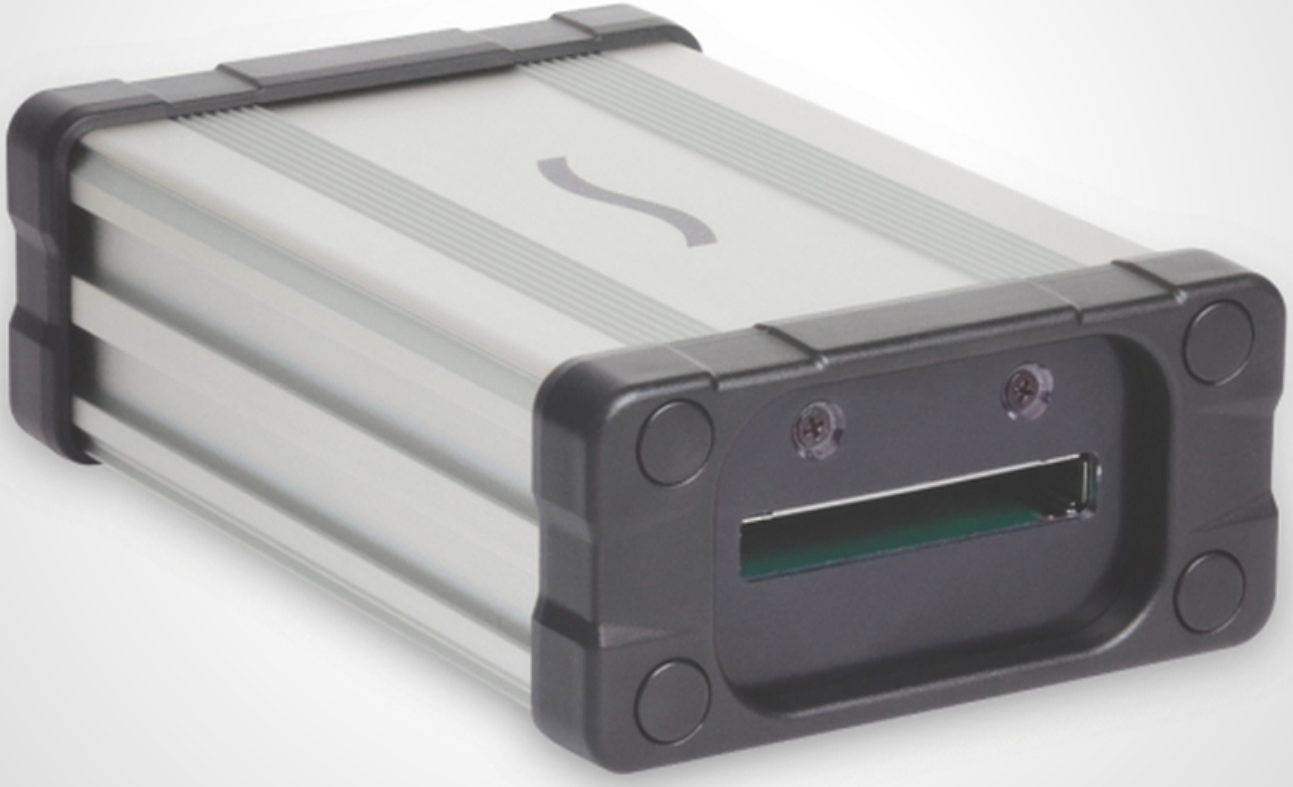
NSA Playset Price Sheet

GUPPYDUGOUT - $200

PCIe Attack Platform

- Expresscard SLOTSCREAMER in a tiny thunderbolt enclosure

GUPPYDUGOUT



3D

SLOTSCREAMER Demo!

Building ALLOYVIPER

3D

Building ALLOYVIPER

3D

Building ALLOYVIPER

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Building ALLOYVIPER

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Building ALLOYVIPER

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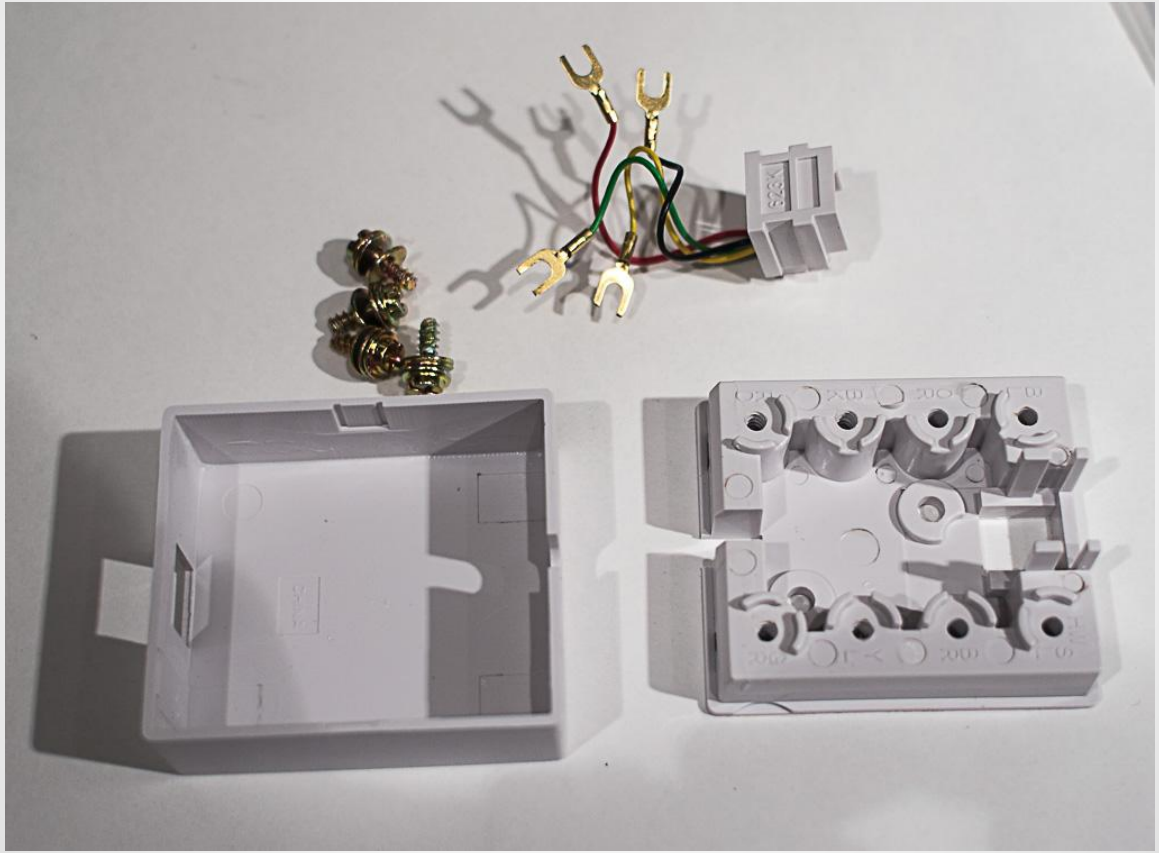
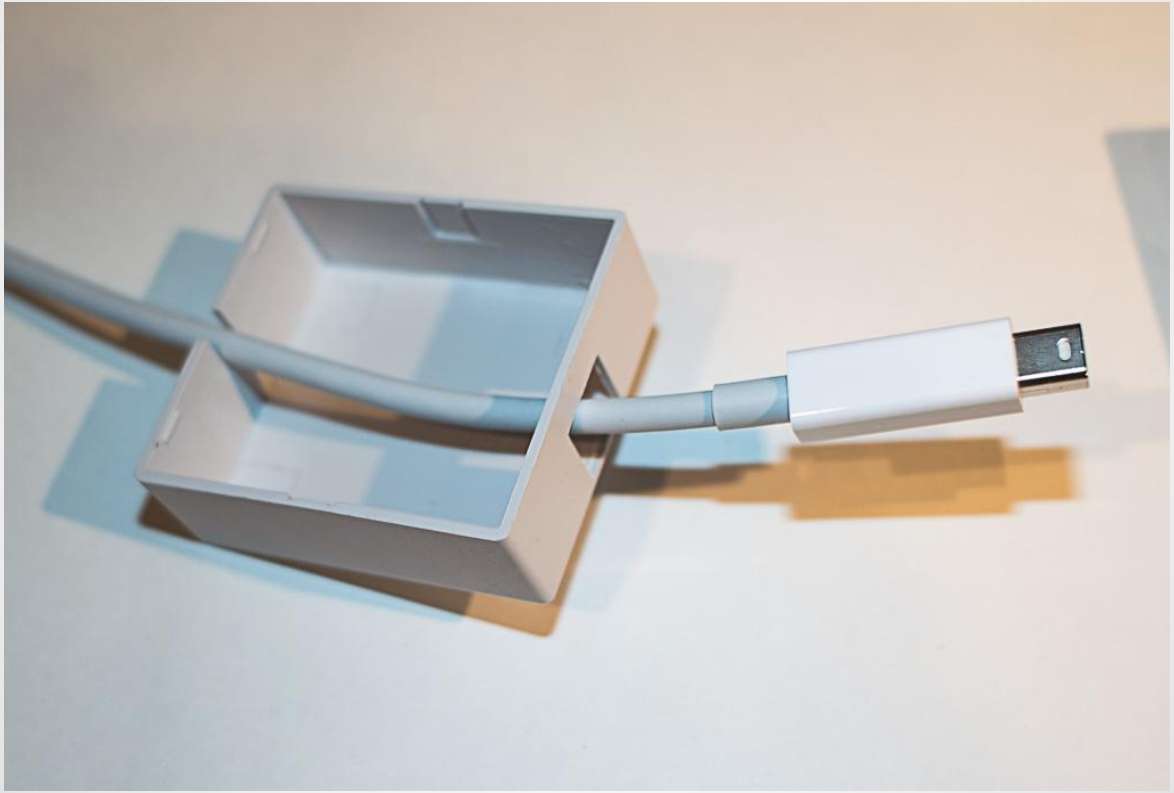
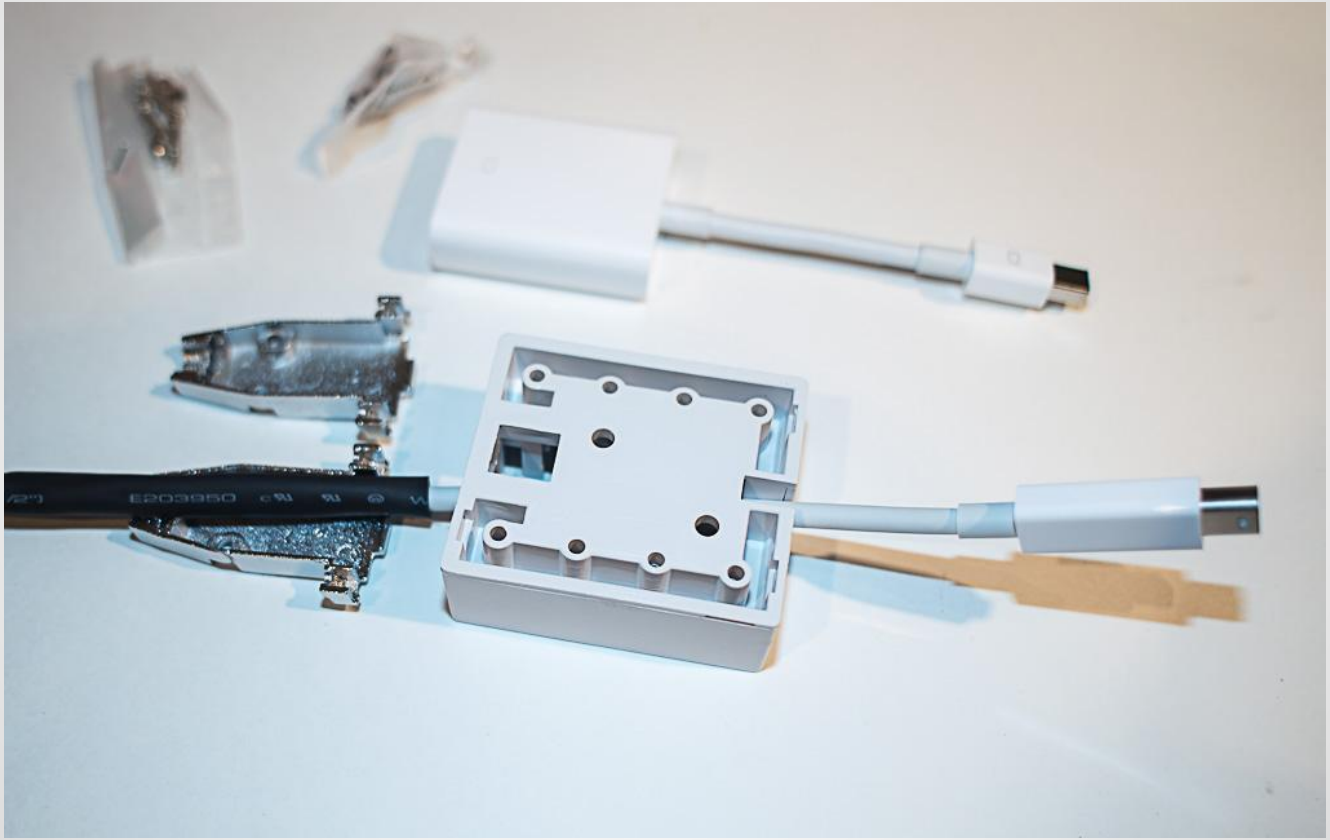
Building ALLOYVIPER



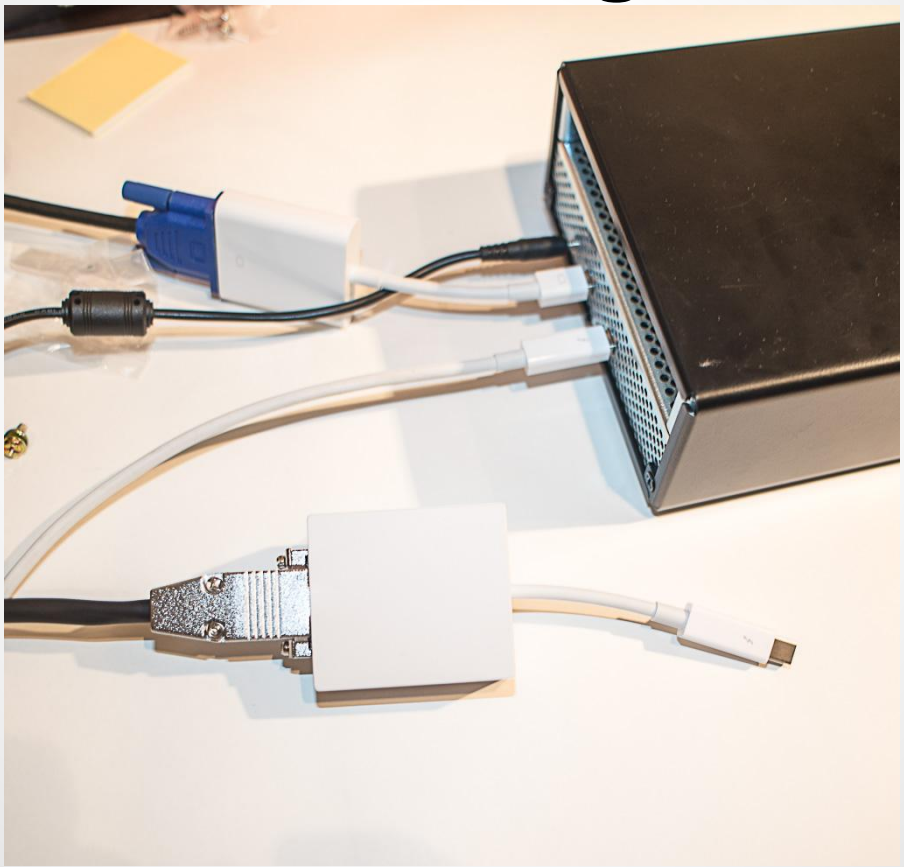
Building ALLOYVIPER



Building ALLOYVIPER



MITMing



NSA Playset Price Sheet

ALLOYVIPER - $50

PCIe Attack Platform

- Decoy cable for use with HALIBUTDUGOUT

Who?

Security Researchers

Hardware Hackers

Hardware Developers

Hobbyists

Other Nerds, Geeks, and Dorks*

An undercover agent or two*

Tinfoil hat wearers*

*presumed

But Why?

Intelligence agencies are not magic

But Why?

If the capability exists, designers need to know to protect against it

But Why?

‘Nation-state’ capabilities are out of scope.

Cheap DIY hacker tools should not be.

But Why?

If any 12-year old can do it,
the design flaw will be fixed

Questions?

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