

# Physical Hardware

## Basic Components

### Compute

#### Processor



[Intel Core i7-8700k](#) - This is the processor I had been using in this PC prior to converting it into a "home server" and there is nothing particularly special about it other than it was at the top of the charts for performance when I bought it. It is a great consumer CPU even to this day but it is starting to feel more limiting as a server CPU due to its lack of ECC support, lower cores/thread count, and limited PCI lanes that it provides.

Cores / Threads	6 / 12
Base Frequency	3.6 GHz
Burst Frequency	4.7 GHz
Cache	12MB L3 Cache
TDP	95W

#### GPU

Intel UHD Graphics 630

Base Frequency	350 MHz
Burst Frequency	1.2 GHz
Max Memory	64GB
QuickSync Video	Yes




### Motherboard

Similarly this motherboard was bought with the intent of building a powerful PC instead of a more server oriented box. It mirrors a lot of the same constraints as the processor but since it was intended for higher end gamers it manages to provide just enough storage and expansion that it has ended up being as good of a motherboard as you'll get without upgrading to one with a more specific server focus.

Manufacturer	Gigabyte
Model	Z370 AORUS Gaming 7 (rev 1.0)
CPU	Support for 8th Generation Intel Core i7 / i5 / i3 processors in the LGA1151 package
Chipset	<a href="#">Intel Z370</a>
Memory	<ul style="list-style-type: none"><li>• 4x DDR4 DIMM supporting up to 64GB</li><li>• Dual channel memory architecture</li></ul>
Display	<ul style="list-style-type: none"><li>• 1x HDMI 1.4</li><li>• 1x DisplayPort 1.2</li></ul>
Networking	<ul style="list-style-type: none"><li>• 1x Intel 1GbE</li><li>• 1x Rivet Networks Killer E2500</li></ul>
Expansion	<ul style="list-style-type: none"><li>• 2x PCIe 3.0 x16 (running x16/x0 or x8/x8)</li><li>• 1x PCIe 3.0 x16 (running at x4)</li><li>• 3x PCIe 3.0 x1</li></ul>
Storage	<ul style="list-style-type: none"><li>• 3x M.2 PCIe x4/x2</li><li>• 6x SATA3</li></ul>
USB	<ul style="list-style-type: none"><li>• 2x USB 3.1 Gen2 (Type-C)</li><li>• 1x USB 3.1 Gen2 (Type-A)</li><li>• 7x USB 3.1 Gen1 (Type-A)</li></ul>

## Memory

<div>Slot 1</div> <div><div>image not found or type unknown</div></div>	<div>Corsair Vengeance LPX 16GB DDR4 2666MHz (1x16GB)</div> <ul style="list-style-type: none"><li>• 2Rx8 Dual Rank</li><li>• CAS Latency 16</li><li>• timing 16-18-18-35</li><li>• 1.2V</li></ul>
--	---

Slot 2		Corsair Vengeance LPX 16GB DDR4 2666MHz (1x16GB) <ul style="list-style-type: none"> <li>• 2Rx8 Dual Rank</li> <li>• CAS Latency 16</li> <li>• timing 16-18-18-35</li> <li>• 1.2V</li> </ul>
Slot 3		Corsair Vengeance LPX 16GB DDR4 2666MHz (1x16GB) <ul style="list-style-type: none"> <li>• 2Rx8 Dual Rank</li> <li>• CAS Latency 16</li> <li>• timing 16-18-18-35</li> <li>• 1.2V</li> </ul>
Slot 4		Corsair Vengeance LPX 16GB DDR4 2666MHz (1x16GB) <ul style="list-style-type: none"> <li>• 2Rx8 Dual Rank</li> <li>• CAS Latency 16</li> <li>• timing 16-18-18-35</li> <li>• 1.2V</li> </ul>









Case

Fractal Design - Define R6 USB C (Blackout) - A fantastic case with an attractive minimalistic design that holds a lot of hard drives and is exceptionally quiet due to sound dampening panels and excellent construction.

Manufacturer	Fractal Design
Model	Define R6 USB C (Blackout)
Features	<ul style="list-style-type: none"> <li>• 10x HDD, 2x SSD</li> <li>• Sound dampening</li> <li>• Excellent build quality</li> </ul>

Storage

#	Capacity	Interface	Type	Manufacturer & Model	Speed
4x 	10TB	SATA	HDD	Western Digital WD1000WMAZ	SATA3 6.0Gb/s

#	Capacity	Interface	Type	Manufacturer & Model	Speed
6x 	18TB	SATA	HDD	Western Digital WD181KFGX	SATA3 6.0Gb/s
2x 	512GB	SATA	SDD	Samsung SSD 860 EVO	SATA3 6.0Gb/s
2x 	1TB	NVMe	SDD	Inland Professional	PCIe 3.0 x2
2x 	1TB	NVMe	SDD	SK hynix MN8BN16291080 BN2A	PCIe 3.0 x4
2x 	16GB	NVMe	SDD	Intel MEMPEK1W016G A	PCIe 3.0 x2

## Cooling

CPU		Noctua NH-D15
Case (rear)		Noctua NF-A14 PWM 140mm
3x Case (front)		Noctua NF-F12 PWM 120mm
Case (bottom)		Noctua NF-F12 PWM 120mm

image not found

# Power Supply


Manufacturer	EVGA
Model	<a href="#">SuperNOVA 850 G+</a>
Features	<ul style="list-style-type: none"><li>• 850W</li><li>• fully module</li></ul>

image not found

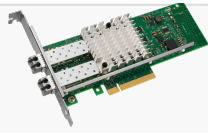
# UPS

Manufacturer	APC
Model	<a href="#">Back UPS PRO BN-M2 1500VA</a>
Features	<ul style="list-style-type: none"><li>• 900Watts / 1.5kVA</li><li>• 6x Batter backed outlets</li><li>• 4x Surge outlets</li></ul>

# Add-On Cards

 <b>PCIe 3.0 x1</b>	<a href="#">10Gtek Intel 82576 Dual RJ45</a> <ul style="list-style-type: none"><li>• PCIe Gen3 x1</li><li>• 2x RJ45 1GbE ports</li></ul>
 <b>PCIe 3.0 x8 (x16 physical)</b>	<a href="#">QNAP QM2-4P-384A Quad M.2 PCIe SSD Expansion Card</a> <ul style="list-style-type: none"><li>• PCIe Gen3 x8</li><li>• 4x switched PCIe x4 NVMe</li></ul>
 <b>PCIe 3.0 x8 (x16 physical)</b>	<a href="#">LSI SAS9211-8I 8PORT</a> <ul style="list-style-type: none"><li>• PCIe Gen3 x8 (x16 physical)</li><li>• 2x Mini SAS SFF-8087 ports</li></ul>
 <b>PCIe 3.0 x1</b>	<a href="#">ZOTAC GeForce GT 710 1GB PCIe</a> <ul style="list-style-type: none"><li>• PCIe Gen3 x1</li></ul> <p>(removed)</p>

**PCIe 3.0 x4 (x16 physical)**



[10Gtek Intel 82599ES Dual SFP+ PCIe x8](#)

- PCIe-Gen3-x8
- 2x SFP+ 10GbE ports
- SR-IOV

(removed)

Revision #31

Created 19 December 2019 13:12:32 by Dustin Sweigart

Updated 16 June 2024 10:42:55 by dustin@swigg.net