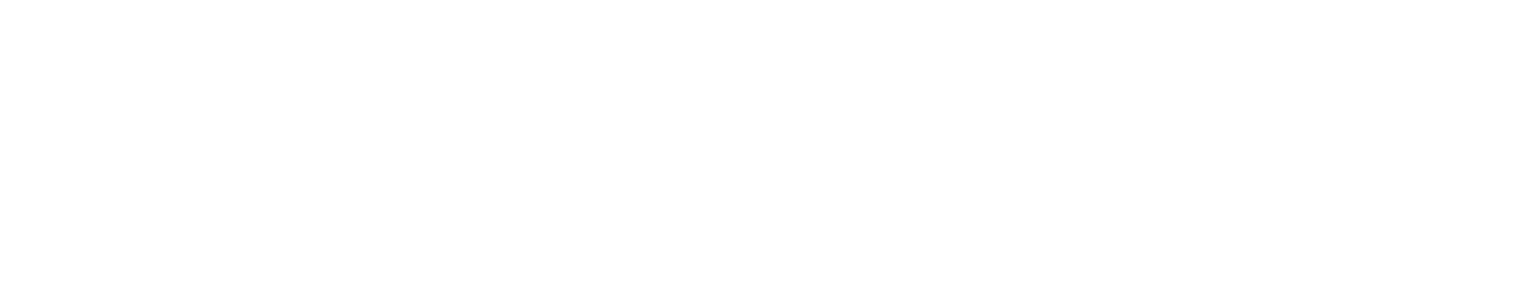
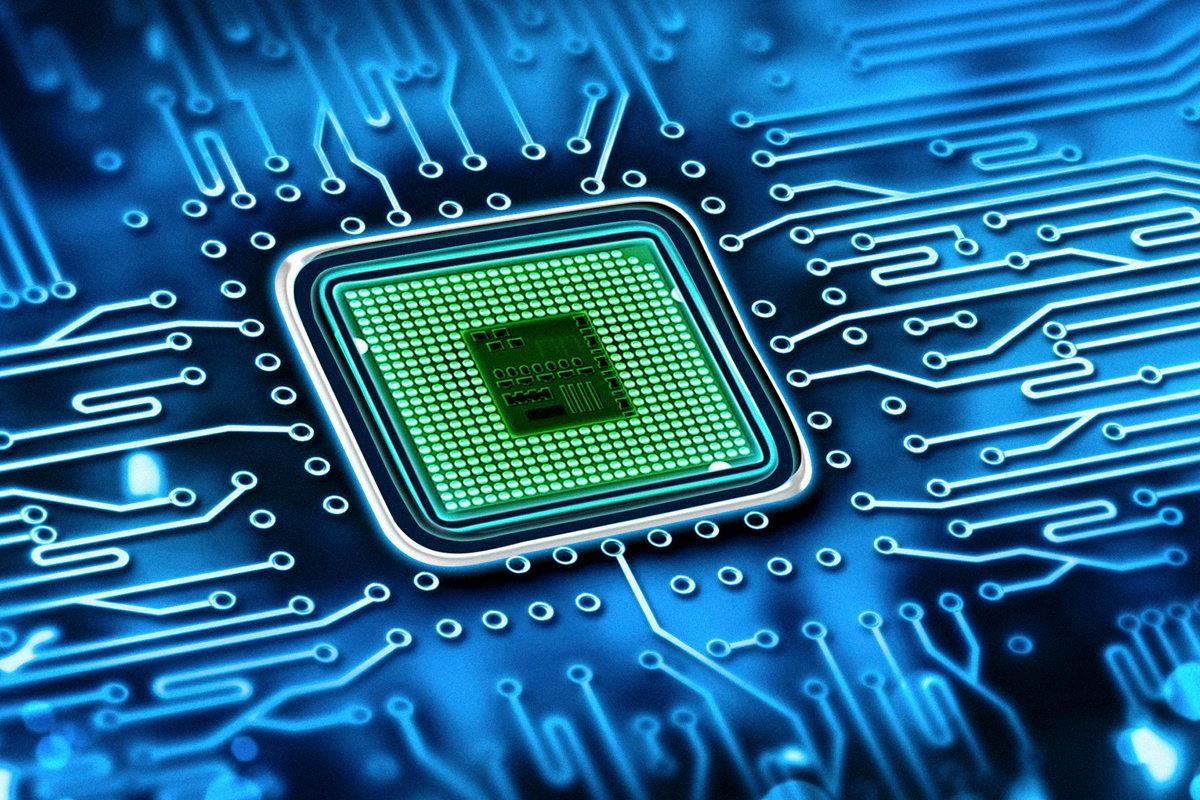
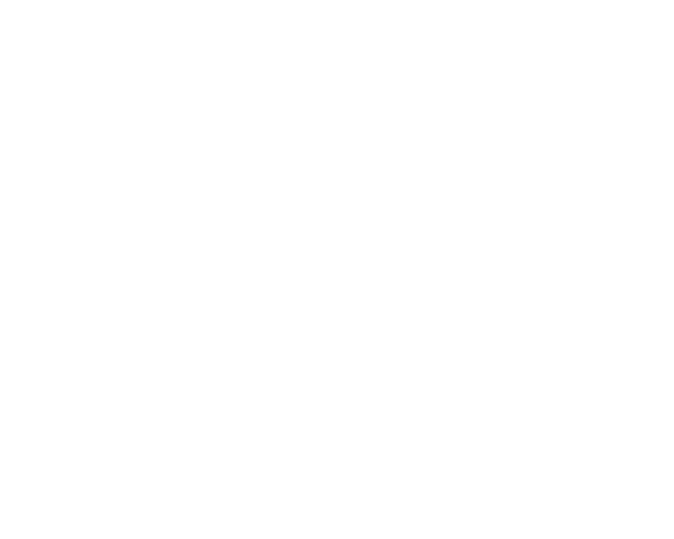


**2021**



**A Proposed Comparison**

**for Architecture of AMD**

**Ryzen 9 3950x**

**and**

**Intel**

**Core i9**

**-**

**9900**

**K**

**ABSTRACT**

Microprocessor is a very basic and integral part of a computer system. Our comparison for Architecture of AMD Ryzen 9 3950x and Intel Core i9-9900K is based on online research and the architecture of the these microprocessors. Our method of research includes, breaking down their architecture , comparing them based on clock speed, cpu, memory and various other things.

At the end , we came to a conclusion.

# Introduction

## Overview

**AMD Ryzen 9 3950x**

This microprocessor is a release of year 2019. Few good features have been added to this version than the previous one.

**Intel Core i9-9900K**

Core i9-9900K is a 64-bit octa-core high-end performance x86 desktop microprocessor introduced by Intel in late 2018. This processor, which is based on the Coffee Lake microarchitecture, is manufactured on Intel's 3rd generation enhanced 14nm++ process.

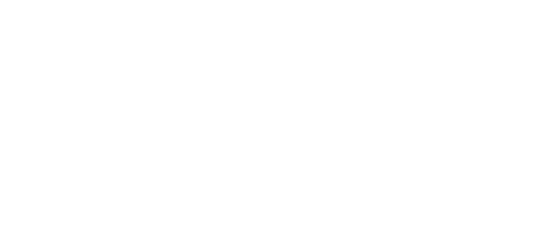
## Advantage of Comparison

Comparing these two models by their architecture will help us understand the lacks in today’s parallel processing and whether there is room for improvement or not.

## Problem Statement

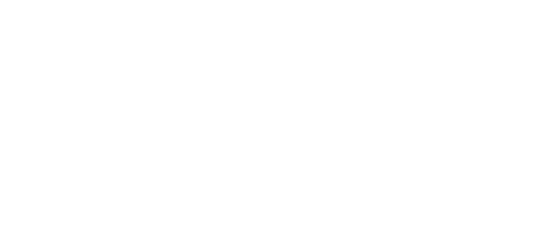
Is parallel processing and distributed system is properly incorporated in AMD Ryzen 9 3950x and Intel Core i9-9900K?

## 1.4 Proposed Methodology



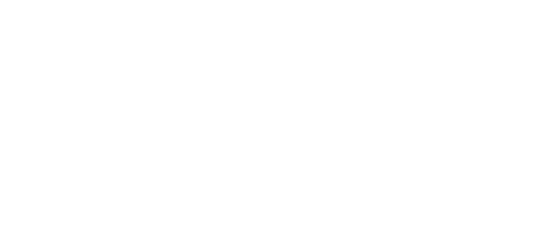
Draw

Conclusion



Compare

Qualities



Breakdown The

Architecture

**Comparison measures:**

* Clock speed
* Instruction Set
* Word size
* CPU
* Memory

**Scopes:**

* We can find out which one is more efficient.
* We can detect the area of improvement.

**Limitation:**

We can only find out what is disclosed by the owner company. So the comparison will not be 100% accurate.

# Literature Review

## Existing Review Work on the Topic

There have been few studies on the architecture of both **AMD Ryzen 9 3950x and Intel Core i9-9900K.**

1. Paul Alcorn says that the Ryzen 9 3950X lets you jam highly threaded horsepower into an affordable motherboard, creating a new CPU class all its own. Its 16 cores and 32 threads redefine what's possible for the mainstream, and its comparatively affordable price-per-core is a great value. He emphasized on number of cores and threads, Power efficiency, high boost frequencies and reasonable price per core.
2. Mark Knapp on his review of AMD Ryzen 9 3950x said, “The AMD Ryzen 9 3950X is the processor to pick for heavily threaded computer work. It blasts through processing tasks, and can handle high-end gaming, but cheaper Ryzen chips handle gaming just as well.” But he found himself amused by the fact that In his testing, the Ryzen 9 3950X’s power draw maxed out just below 144 3 watts.
3. Paul Acorn in his research of Intel Core i9-9900K found that this one shows good performance in both single- and multi-threaded workloads but heavy power consumption under heavy load.
4. Kevin Lee finds Intel Core i9-9900K’s high clock speed boosting ( up to 5.0GHz ) very satisfying. But this one will not make a good gaming pc and also a little bit expensive.

## 2.2References of Existing Review Work on the Topic

1. Paul Alcorn on AMD Ryzen 9 3950x:

<https://www.tomshardware.com/reviews/amd-ryzen-9-3950x-review>, Date:

November 14, 2019]

1. Mark Knapp on AMD Ryzen 9 3950x: <https://www.techradar.com/reviews/amd-ryzen-9-3950x>, Date: December

25, 2019]

1. Paul Acorn on Intel Core i9:

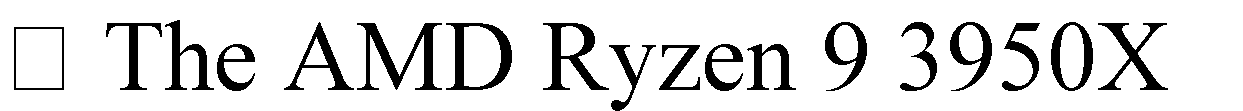
[https://www.tomshardware.com/reviews/intel-core-i9-9900k-9th-gencpu,5847.html](https://www.tomshardware.com/reviews/intel-core-i9-9900k-9th-gen-cpu,5847.html) , Date: November 15, 2019]

1. Kevin Lee on Intel Core i9: [https://www.techradar.com/reviews/intelcore-i9-9900k-review](https://www.techradar.com/reviews/intel-core-i9-9900k-review) , Date: June 19, 2019]

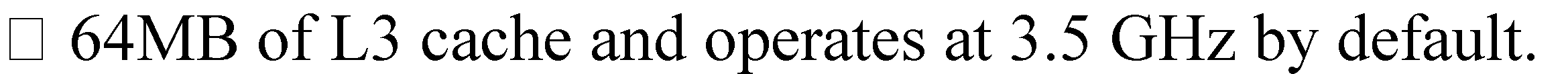
# Primary Findings

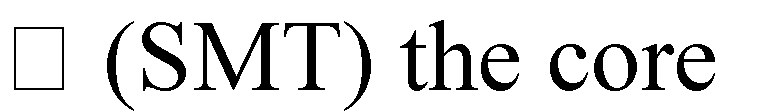
## Primary Findings

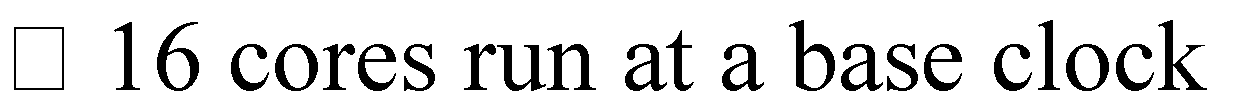
**AMD Ryzen 9 3950X**

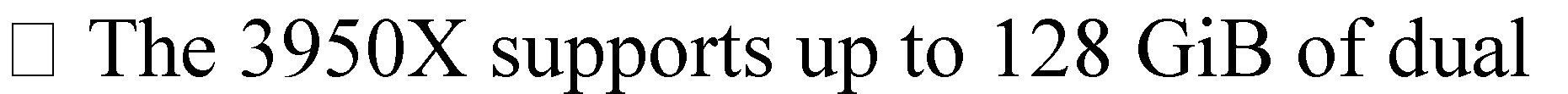
 is a 64-bit hexadeca-core high-end x86 desktop processor

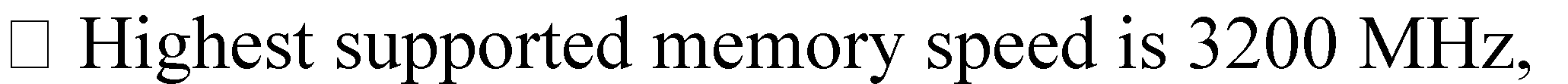
with 16 cores, launched in November 2019. Part of Ryzen 9 lineup, using the Zen 2 (Matisse) architecture with Socket AM4.

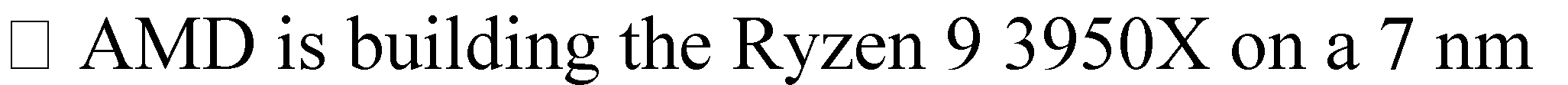


-count is effectively doubled, to 32 threads.

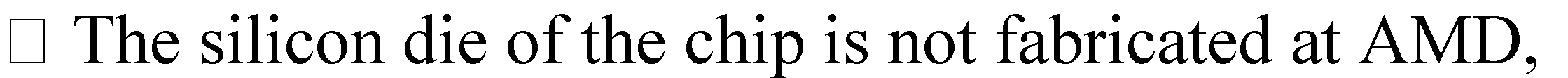
 speed of 3.5GHz, but they can boost up to 4.7GHz.

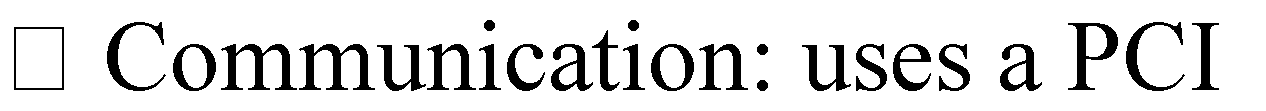
-channel DDR4-3200 memory.

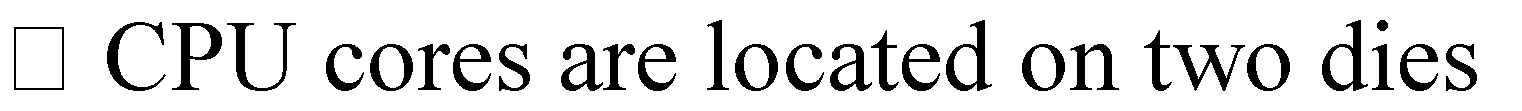
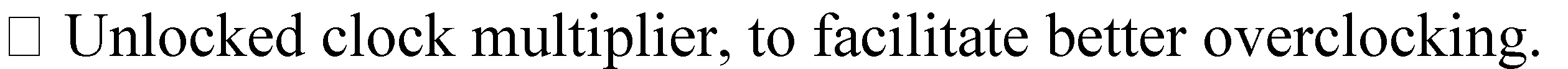


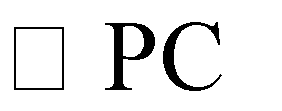
 production process using 3,800 million

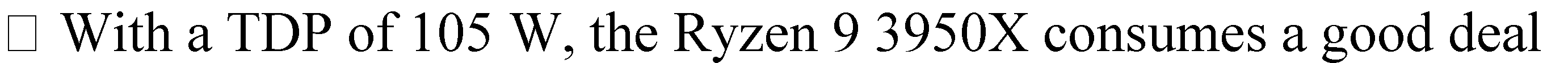
transistors.

 but at the foundry of TSMC.

-Express Gen 4 connection

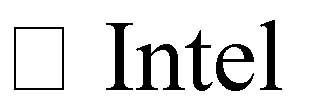


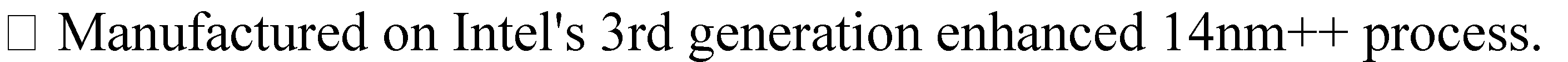
I Express, Infinity Fabric, memory controllers and extra I/O logic are located on a separate die, which is manufactured on 0.014 micron technology

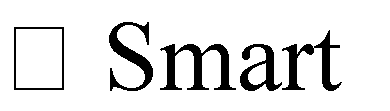
 of power, so decent

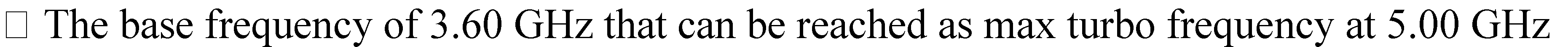
cooling is needed

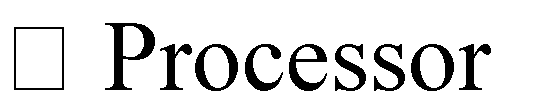
**Intel-Core i9-9900k**

-Core i9-9900k is a 64-bit octa-core high-end performance x86 desktop microprocessor introduced by Intel in late 2018.

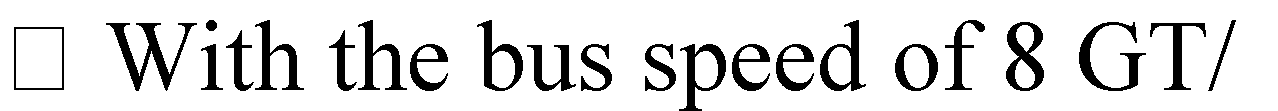


 Cache of 16 MB containing 8 cores and 16 threads.

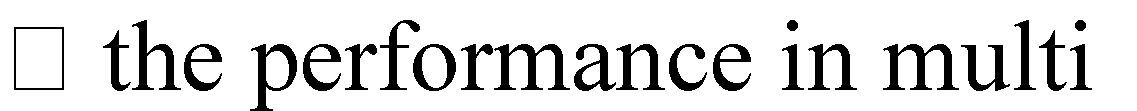


 has dual channel of max 128GB of size that supports up to DDR4-2666 bus

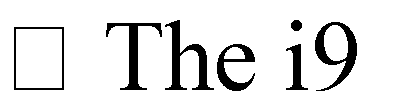
speed

s DMI3 ,incorporates Intel's UHD Graphics 630 IGP operating

at 350 MHz base with a burst frequency of 1.2 GHz.

-threaded applications is up to 25 % faster than the older Core

i7-8700K.

-9900K operates at 3.6 GHz with a TDP of 95 W and a Turbo Boost frequency of up to 5GHz.

## Conclusion

With all our findings, we came to understand that though in previous versions intel has dominated the market for a long time. AMD processors have been side lined . But with AMD Ryzen-9 this will change. This microprocessor has potential to grab the market with its fine architecture and efficiency.