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# Google Fuchsia

**Fuchsia** is a capability-based operating system currently being developed by Google. It first became known to the public when the project appeared on GitHub in August 2016 without any official announcement. In contrast to prior Google-developed operating systems such as Chrome OS and Android, which are based on Linux kernels, Fuchsia is based on a new microkernel called "Zircon".

Upon inspection, media outlets noted that the code post on GitHub suggested Fuchsia's capability to run on universal devices, from embedded systems to smartphones, tablets and personal computers. In May 2017, Fuchsia was updated with a user interface, along with a developer writing that the project was not a "dumping ground of a dead thing", prompting media speculation about Google's intentions with the operating system, including the possibility of it replacing Android.

It is distributed as free and open-source software under a mix of software licenses, including BSD 3 clause, MIT, and Apache 2.0.

## Contents

| Fuchsia | |
|---|---|
|  <br> Screenshot of the Armadillo user shell, part of Fuchsia | |
| **Developer** | Google |
| **Written in** | Mixed: C, C++, Dart, Go, LLVM, Python, Rust, Shell, Swift, TypeScript |
| **OS family** | Zircon |
| **Working state** | Current |
| **Source model** | Open-source |
| **Initial release** | 15 August 2016 |
| **Available in** | English |
| **Platforms** | ARM64, x86-64 |
| **Kernel type** | Microkernel capability-based |
| **License** | Mixed: BSD 3 clause, MIT, Apache 2.0 |
| **Official website** | fuchsia.googlesource .com (https://fuchsia.go oglesource.com) |

## History

In August 2016, media outlets reported on a mysterious codebase post published on GitHub, that revealed that Google was developing a new operating system called "Fuchsia". While no official announcement was made, inspection of the code suggested its capability to run on universal devices, including "dash infotainment systems for cars, to embedded devices like traffic lights and digital watches, all the way up to smartphones, tablets and PCs". The code differs from Android and Chrome OS due to its being based on the "Zircon" kernel (formerly "Magenta")[1] rather than on the Linux kernel.[2][3][4]

In May 2017, Ars Technica wrote about Fuchsia's new user interface, an upgrade from its command-line interface at its first reveal in August, along with a developer writing that Fuchsia "isn't a toy thing, it's not a 20% project, it's not a dumping ground of a dead thing that we don't care about anymore".[5] Multiple media outlets wrote about the project's seemingly close ties to Android, with some speculating that Fuchsia might be an effort to "re-do"[6] or replace Android[7][8][9] in a way that fixes problems on that platform.[5]

In November 2017, initial support for the Swift programming language was committed.[10]

In January 2018, Google published a guide how to run Fuchsia on Pixelbooks.[11][12] This was done successfully by Ars Technica.[13]

## Features

Fuchsia's user interface and apps are written with "Flutter", a software development kit allowing cross-platform development abilities for Fuchsia, Android and iOS. Flutter produces apps based on Dart, offering apps with high performance that run at 120 frames per second. Flutter also offers a Vulkan-based graphics rendering engine called "Escher", with specific support for "Volumetric soft shadows", an element that Ars Technica wrote "seems custom-built to run Google's shadow-heavy 'Material Design' interface guidelines".

Due to the Flutter software development kit offering cross-platform opportunities, users are able to install parts of Fuchsia on Android devices. Ars Technica noted that, while users could test Fuchsia, nothing "works", adding that "it's all a bunch of placeholder interfaces that don't do anything", though finding multiple similarities between Fuchsia's interface and Android, including a Recent Apps screen, a Settings menu, and a split-screen view for viewing multiple apps at once.[5]

The second review by Ars Technica was impressed with the progress, noting that things were now working, and was especially pleased by the hardware support. One of the positive surprises was the support for multiple mouse pointers.[13]

### Zircon

Fuchsia is based on a new microkernel called "Zircon". Zircon is derived from "Little Kernel",[14][15] a small operating system intended for embedded systems. "Little Kernel" was developed by Travis Geiselbrecht, a creator of the NewOS kernel used by Haiku.[16]

## See also

- FreeRTOS – microkernel-based, real-time operating system (RTOS)
- Genode - Microkernel and capability-based operating system
- Haiku – open-source desktop operating system
- HelenOS – custom microkernel multiserver operating system written from scratch
- Integrity – microkernel RTOS with a Evaluation Assurance Level 6+ semi-formally designed rating by the NSA
- L4 microkernel family – L4 family of small, fast, open-source microkernels
- MINIX 3 – Unix-like microkernel operating system
- Plan 9 from Bell Labs – distributed operating system meant to succeed UNIX
- QNX – POSIX-conforming, microkernel RTOS
- Redox - microkernel-based operating system written in Rust

## References

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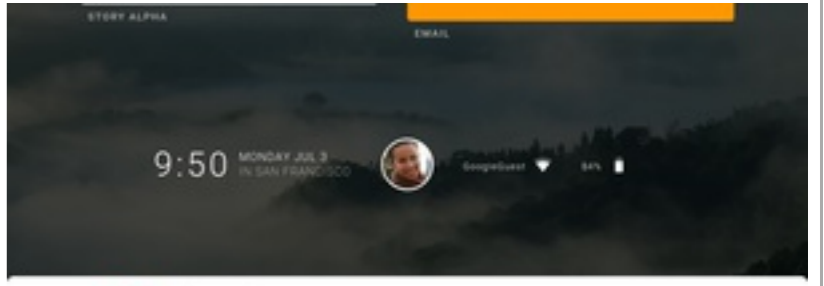
## External links

- Official website (http://fuchsia.googlesource.com), Google source code repository
- Fuchsia-mirror (https://github.com/fuchsia-mirror) on GitHub
- (unofficial) Google Fuchsia Wiki (https://fuchsia.miraheze.org/wiki/Main_Page)