

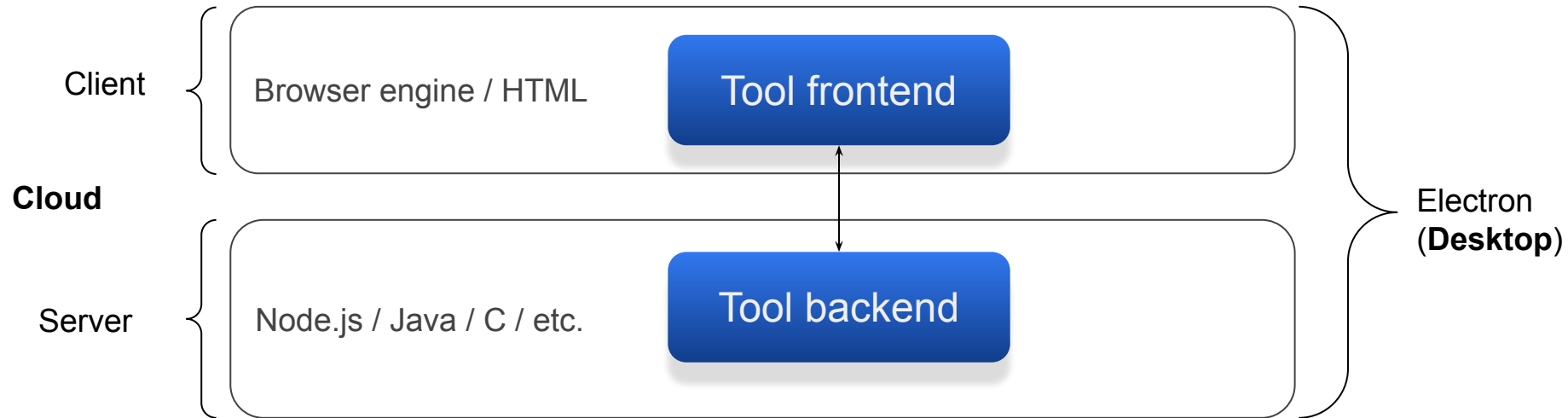
# CDT.cloud? C/C++ tooling in the web

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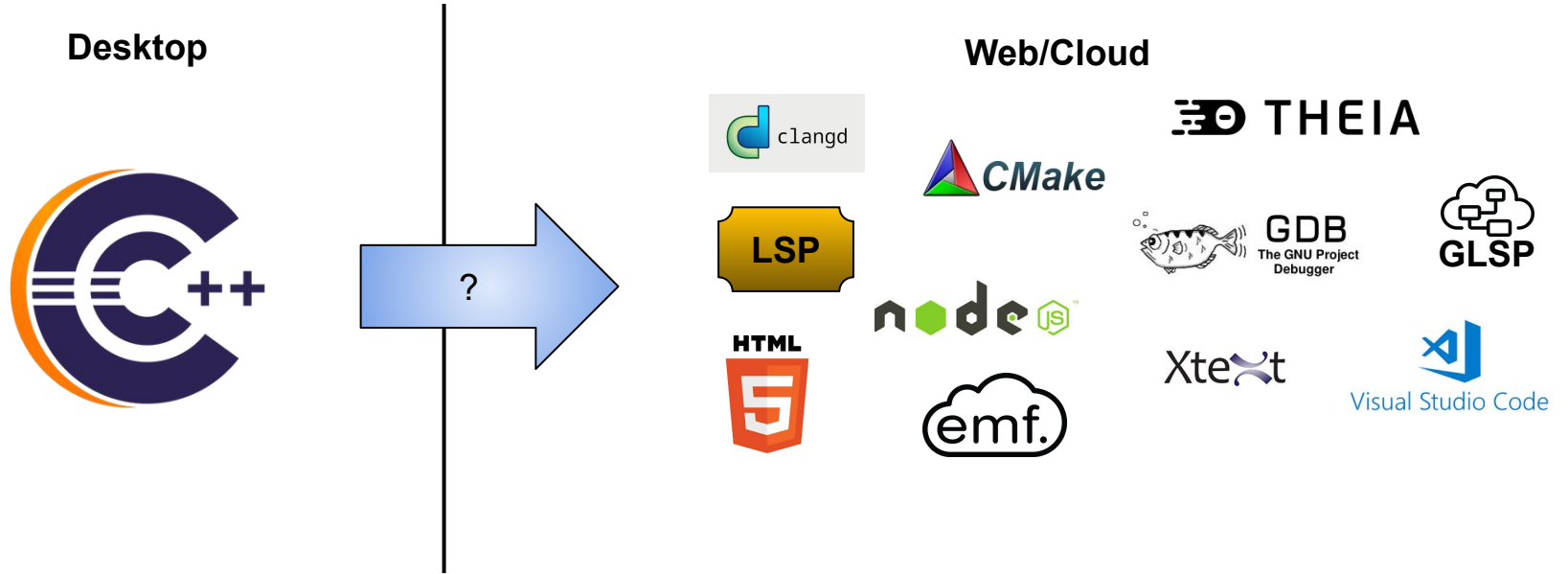
~~Why C/C++ tooling in the web/cloud?~~

How to provide C/C++ tooling in the  
web/cloud?

## Typical architecture of a web/cloud-based tool



# C/C++ tooling in the web



## CDT.cloud Blueprint



- Template for a web-based C/C++ development IDE based on Theia
- Includes selected Theia and VS Code extensions

Early state available. See [cdt-cloud.io](https://cdt-cloud.io) for more information.

# The underlying tool platform

## Desktop vs Cloud

Many vendors follow a dual strategy:

Web-based on the desktop first, add cloud offering as a second step

CDT.cloud Blueprint: Theia based Desktop application (cloud coming soon)

## Theia vs VS Code

- VS Code is an extensible editor
- Theia is a framework for web-based editors and tools



VS Code extensions can be used both in Theia and VS Code

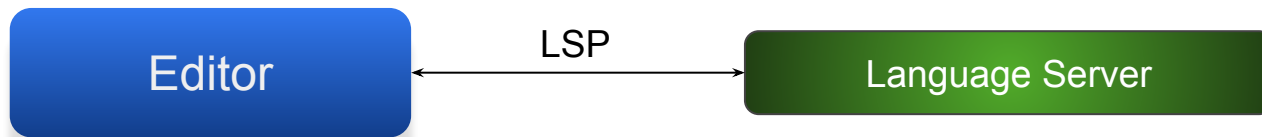
Some vendors follow a dual strategy:

Some features as a VS Code extension, full tool based on Eclipse Theia



## Language support

- Historically: Built into the IDE (e.g. Eclipse CDT)
- Today: Based on LSP (Language Server Protocol)



## C/C++ language servers



### CPP tools (ms-vscode.cpptools)

- Very popular and mature
- Includes language server and debug support
- Restrictive license -> Can't be used outside of VS Code



### clangd (llvm-vs-code-extensions.vscode-clangd)

- Part of the LLVM project
- Fully-fledged alternative
- Can be used in Theia (and other tools)

## clangd

De facto choice for all IDE vendors



To note:

- Requires build information per source file (“compile\_commands.json”)
  - Consequence on build integration
- Multi-project capabilities under investigation in the embedded SIG

# Compilation

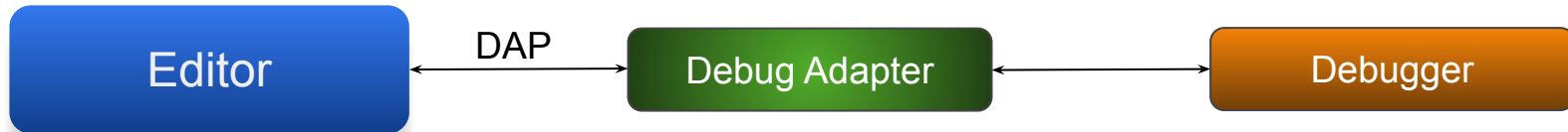
- Traditionally very project-specific

Some options:


- Terminal (CLI)
- Scripts / Tasks
- Cmake tools (ms-vscode.cmake-tools)
- Own UI

# Debugging

Accomplished via DAP (Debug Adapter Protocol)



## Debug Adapters

- CPP Tools (ms-vscode.cpptools) 
- CDT GDB (eclipse-cdt.cdt-gdb-vscode) from Eclipse CDT
- CodeLLDB (vadimcn.vscode-lldb)

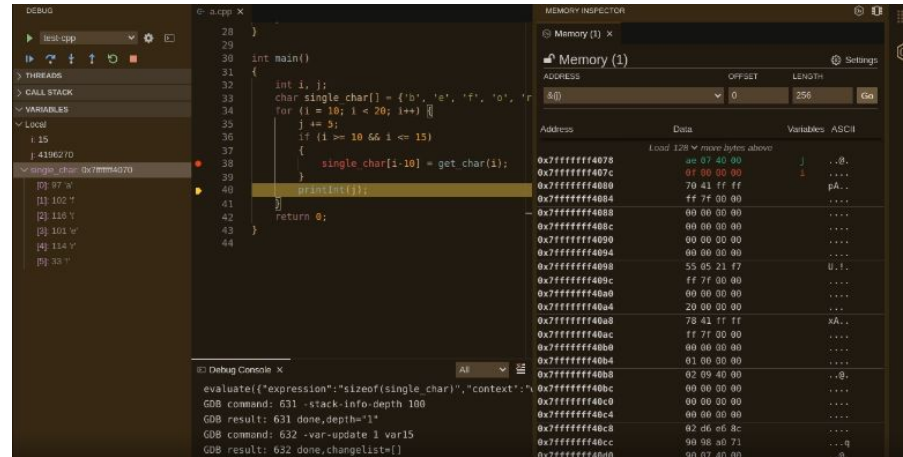
### Embedded:

- Native Debug (webfreak.debug)
- Cortex-Debug (marus25.cortex-debug)

# Debug Memory Inspector

Recently contributed to Theia

- Currently Theia only
- Tested with CDT GDB adapter but should work with any adapter which can provide memory information
- Part of “@theia/cpp-debug” but this will probably change in the future





# Tracing

## Eclipse Trace Compass

- Refactored architecture to use TSP (Trace Server Protocol)
- Theia integration exists
  - Theia-independent React integration is available



## Conclusion

- Fast moving platform with a lot of potential
- C/C++ but also other areas
- Many embedded vendors adopting Theia
- Many use cases of C/C++ development are already covered

See [cdt-cloud.io](https://cdt-cloud.io) to stay up to date

## Other sessions

Tue 26.10., 13:50, [Getting started with Eclipse Cloud Dev Tools](#)

Tue 26.10., 14:30, [Diagram editors with Eclipse GLSP - 1.0](#)

Tue 26.10., 16:50, [Migrating Eclipse-based Tools/Plugins to Eclipse Theia or VSCode](#)

Tue 26.10., 17:30, Spotlight session

Wed 27.10., 16:10, [Model validation, diffing and more with EMF.cloud](#)

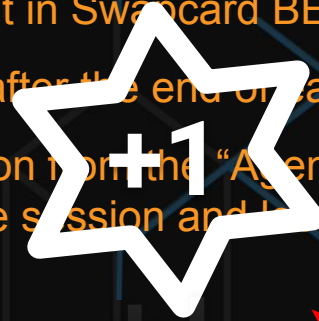
**Wed 27.10., 18:15, [BoF - Building web-based tools with Eclipse](#)**

**[EclipseSource Booth](#)**

# Evaluate ~~the~~ Sessions

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Questions?