ECS 2025

FROM LOCAL TO CLOUD: HOW TO DEVELOP IN CONTAINERS

TOBIAS FENSTER

MANAGING DIRECTOR @ 4PS GERMANY
CHIEF ENGINEER @ HILTI

AZURE MVP & REGIONAL DIRECTOR
DOCKER CAPTAIN

Premium Partner

Microsoft

Premium Sponsor

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Why

(VS Code) devcontainers

Why?

- Cleanly separated development systems with better resource utilization than e.g. with VMs
  - No version conflicts and side effects
  - No "littering" → Simply throw away and recreate
- All dependencies, tools, etc. including versions described in configuration files in the repo
  - IaC approach for local development environments
  - No drifting apart of different developers
  - Clear and simple rollout of changes in the development stack
- Extremely fast setup of development environments
  - Extremely fast onboarding of new developments
  - Simple and clean switching between projects

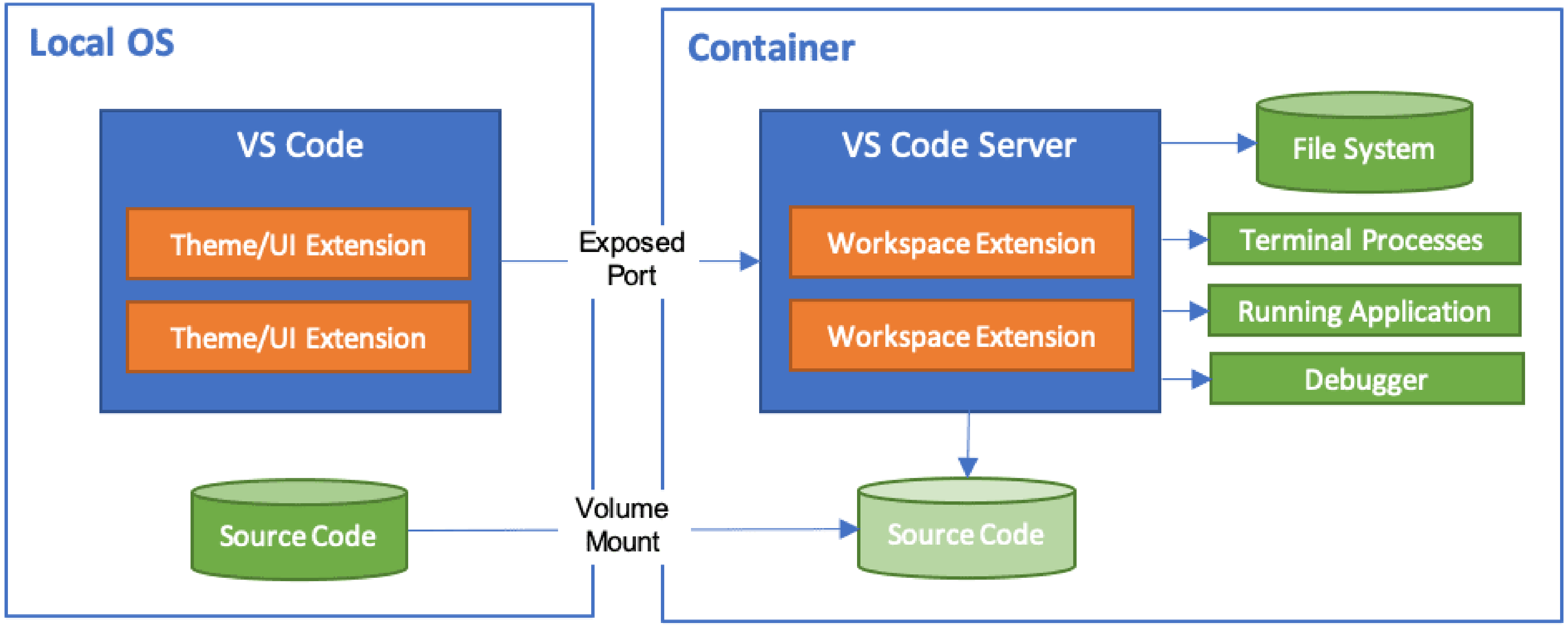
VS Code devcontainers

- Containerized, configurable, local development environment
- Connection via VS Code
- Full functionality including extensions and access to local and offline support
- Underlying standard: https://containers.dev, supported by other IDEs, e.g. IntelliJ IDEA

→ Very good development environment for all scenarios (except Windows-based development...)

- Ideal starting point for GitHub codespaces (same technology)

VS Code devcontainers



Source: https://code.visualstudio.com/docs/remote/containers

Demo VS Code devcontainers

Serverless development (with GH Codespaces)

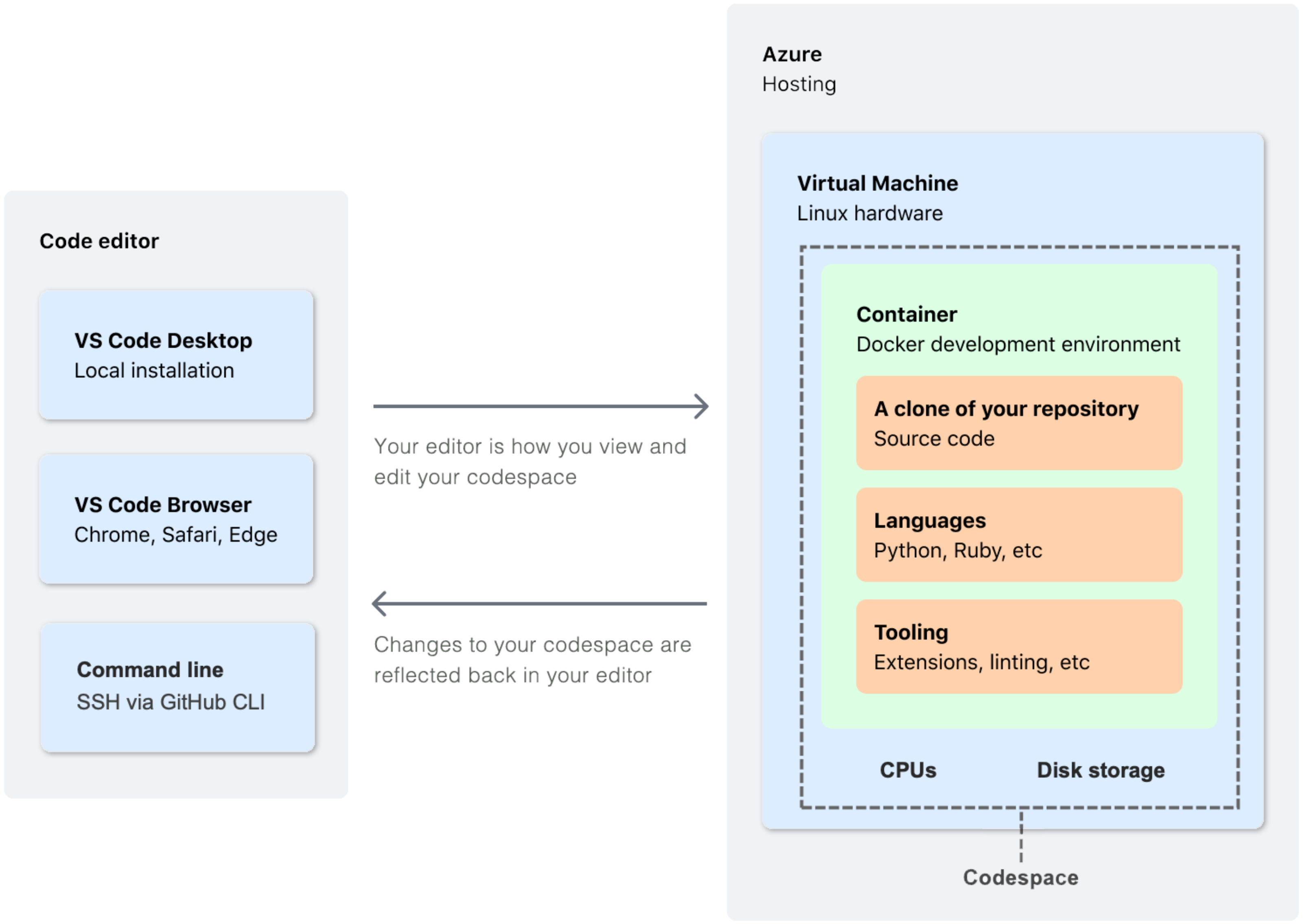
Why?

- Even faster and easier setup directly in your browser
- No local infrastructure, therefore no local dependencies
  - Configurable CPU / RAM / storage with pay per use
  - Development on an iPad?!
- (Almost) all benefits of devcontainers, but
  - no offline support and
  - no access to local resources
- GitHub is using it internally: “Over the past months, we’ve left our macOS model behind and moved to Codespaces for the majority of GitHub.com development”. (https://github.blog/2021-08-11-githubs-engineering-team-moved-codespaces/)

GitHub Codespaces

- GitHub Codespaces
  - Containerized, configurable, Cloud development environment
  - Connection via VS Code, IntelliJ IDEA, other IDEs or browser
  - Full functionality incl. extensions
- Other services supporting the devcontainer standard: CodeSandbox, DevPod
- Great development environment for most scenarios

GitHub codespaces



Source: https://docs.github.com/en/codespaces/about-codespaces/what-are-codespaces

Demo GitHub Codespaces

SSH-based development (with containers)

Why?

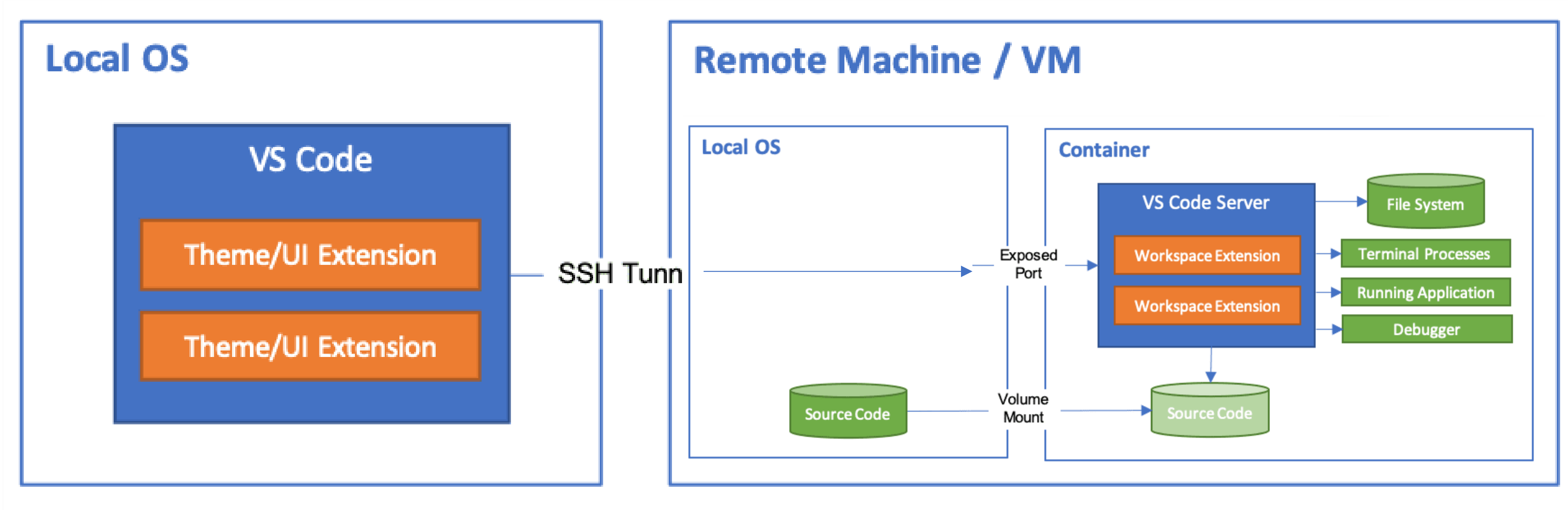
- Offload development work to a VM
  - Easier switching (e.g. in lots of meetings…)
  - Keep local resources or extend resources
  - Easy setup
  - Potentially security restrictions e.g. for externals
- Access to different OS (laptop is Windows, development on Windows or vice versa)
  - Also access to Desktop if needed
- Can be combined with devcontainers

VS Code SSH-based remote development

- VM set up for development with an SSH service
- Connection via VS Code
- Full functionality including extensions
- Can be combined with devcontainers

→ Very good development environment for all scenarios including Windows-based development and access to host tools like e.g. office

VS Code SSH-based remote development



Source: https://code.visualstudio.com/docs/remote/ssh

Demo VS Code SSH-based remote development

THANK YOU,
YOU ARE AWESOME ❤️

PLEASE RATE THIS SESSION
IN THE MOBILE APP.

Find me on tobiasfenster.io

Bonus topic: Multiple containers

Bonus topic: Multiple containers

- Sometimes one container is not enough
  - Frontend
  - Backend
  - Database
  - Cache
  - ...
- Can we do that with devcontainers as well?
  - One devcontainer per tier
  - One VS Code instance connected per tier
  - Additional components

Demo bonus topic: multiple containers