

Lowering the Barrier to Kubernetes Proficiency

Navigating the Stormy Seas of Information Overload

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Developer Advocate



@punkdata

agenda

- **why : Kubernetes : ?**
- **intro : Kubernetes**
- **implementing : Kubernetes**

Hi I'm **Angel**

Developer Advocate.

My job is to **inspire**
developers!

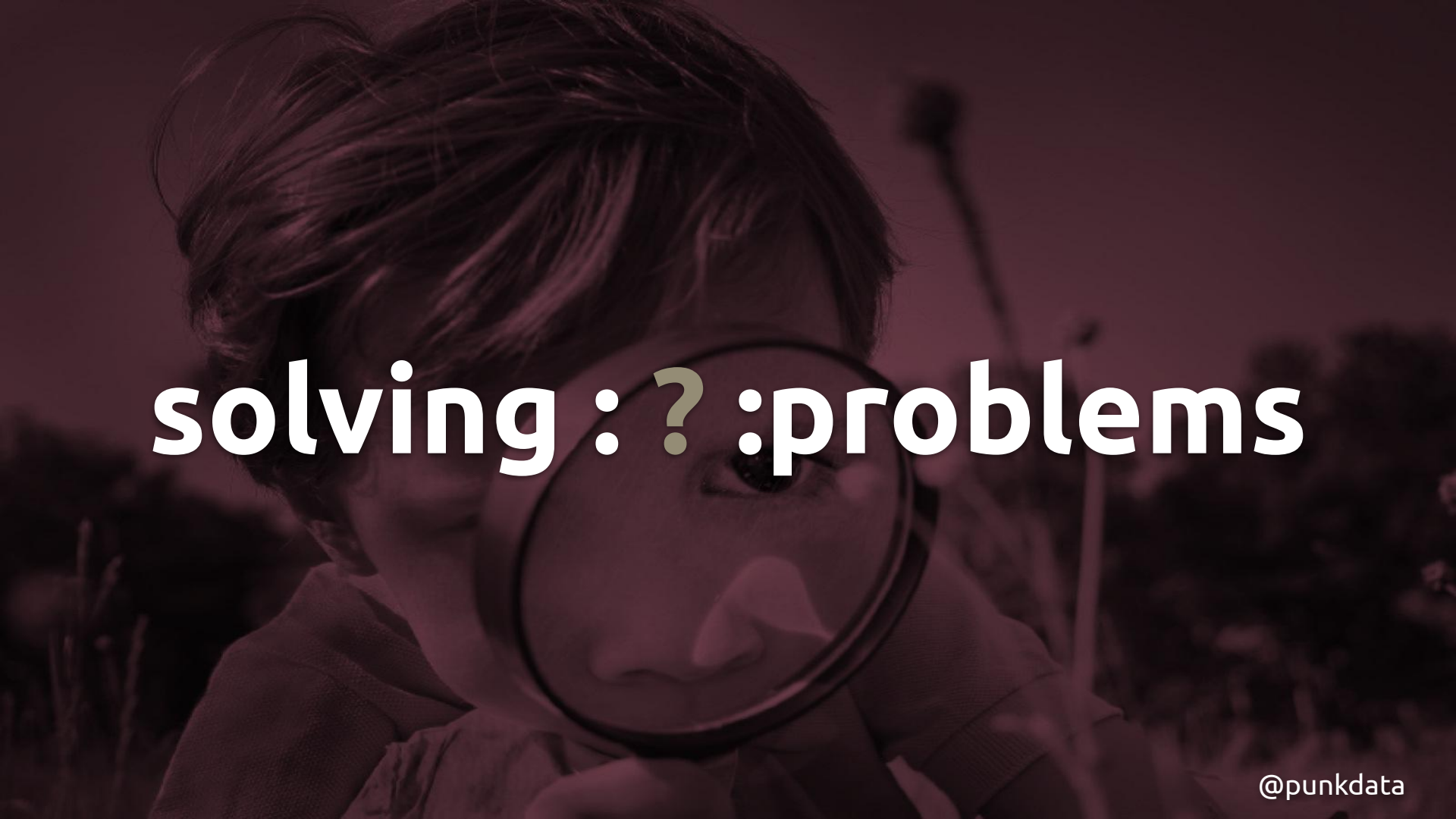


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A dark silhouette of a person sitting at a desk, leaning back with one hand on their head in a thinking pose. Above them are icons of a lightbulb and several interlocking gears, suggesting a process of thought or problem-solving. The background is a solid dark color.

why : Kubernetes : ?

A close-up photograph of a young child with dark, wavy hair. The child is holding a magnifying glass over their right eye, which is significantly enlarged by the lens. The child's expression is neutral. The background is a soft-focus outdoor scene with green foliage. The entire image has a dark, reddish-brown color overlay.

solving : ? : problems

A hand holding a smartphone with a Windows Phone interface. The screen shows a grid of colorful app tiles. Overlaid on the image is the text 'new : hotness' in white and 'tech : junkie' in a light blue color.

new : hotness
tech : junkie



keeping : up : with : joneses

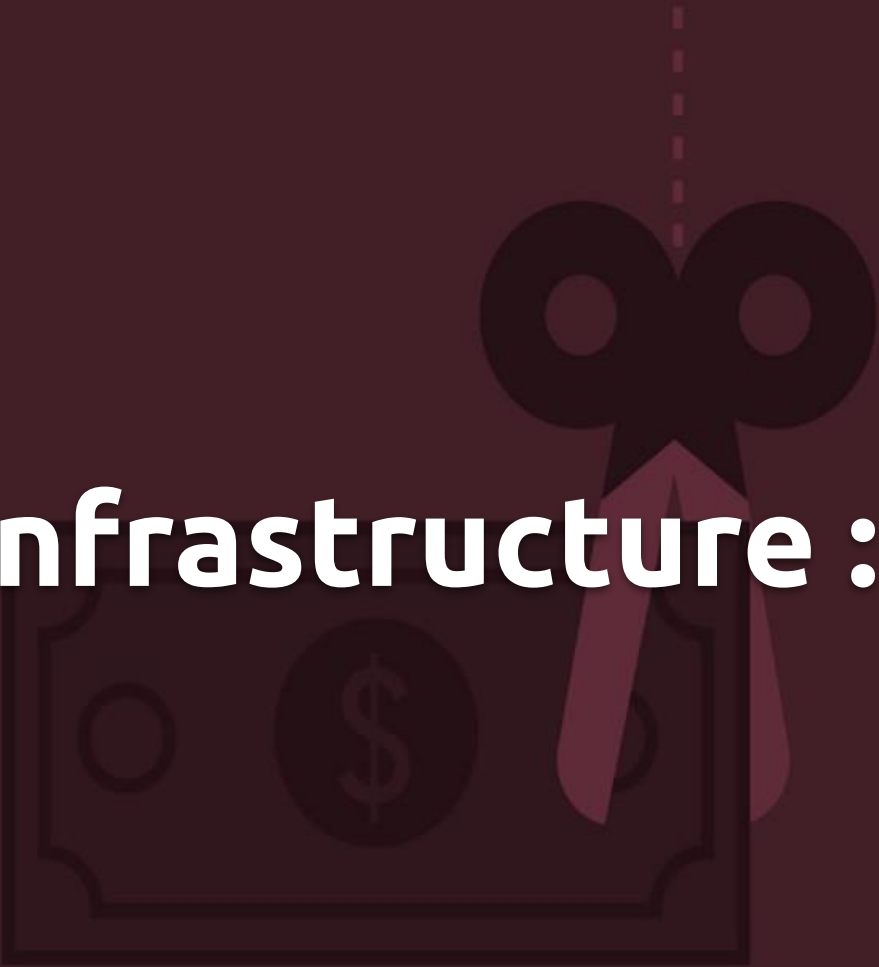
A man with a beard, wearing a light-colored shirt and a dark tie, is leaning over a laptop. He is looking at the screen with a focused expression. The background is a dark, textured surface. Overlaid on the image are various digital elements: floating numbers (345, 1, 5), error messages (error:489, error:569, error:56, error:7788, error:433), and symbols like @ and X. The overall color scheme is dark with a reddish-brown tint.

the boss : told : me to

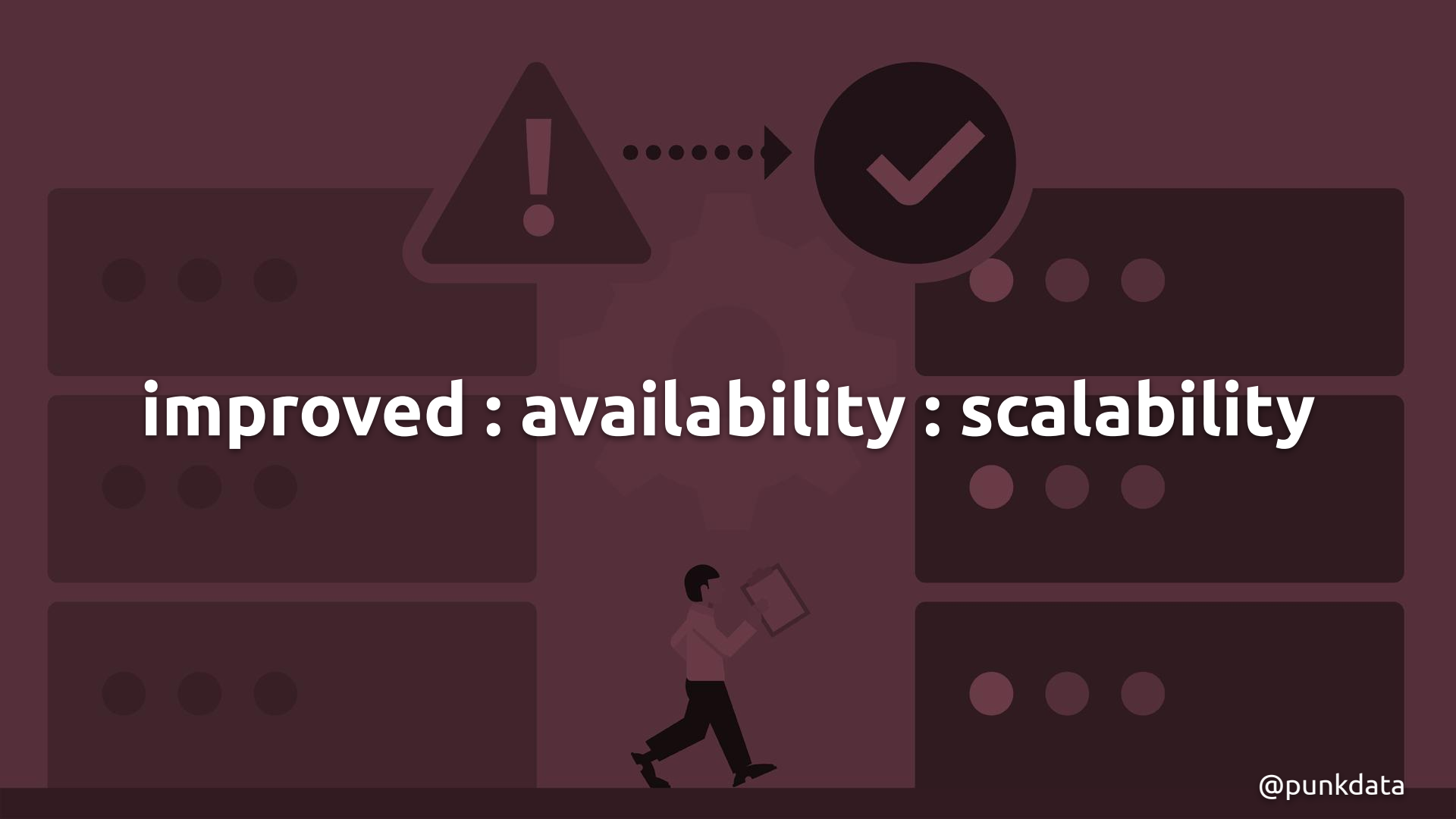
A monochromatic red-tinted photograph of two people sitting on a concrete ledge outdoors. The person on the left is wearing a dark t-shirt and is looking at a laptop. The person on the right is wearing a light-colored t-shirt and is gesturing with their hands while talking. In the background, there is a planter with some tall grass. The text "common : reasons" is overlaid in the center in a white, bold, sans-serif font.

common : reasons

**faster : software
dev : cycles**

A dark red background featuring a faint illustration of a banknote with a dollar sign. A pair of scissors is positioned to cut the banknote horizontally. A dashed line extends upwards from the scissors' handles.

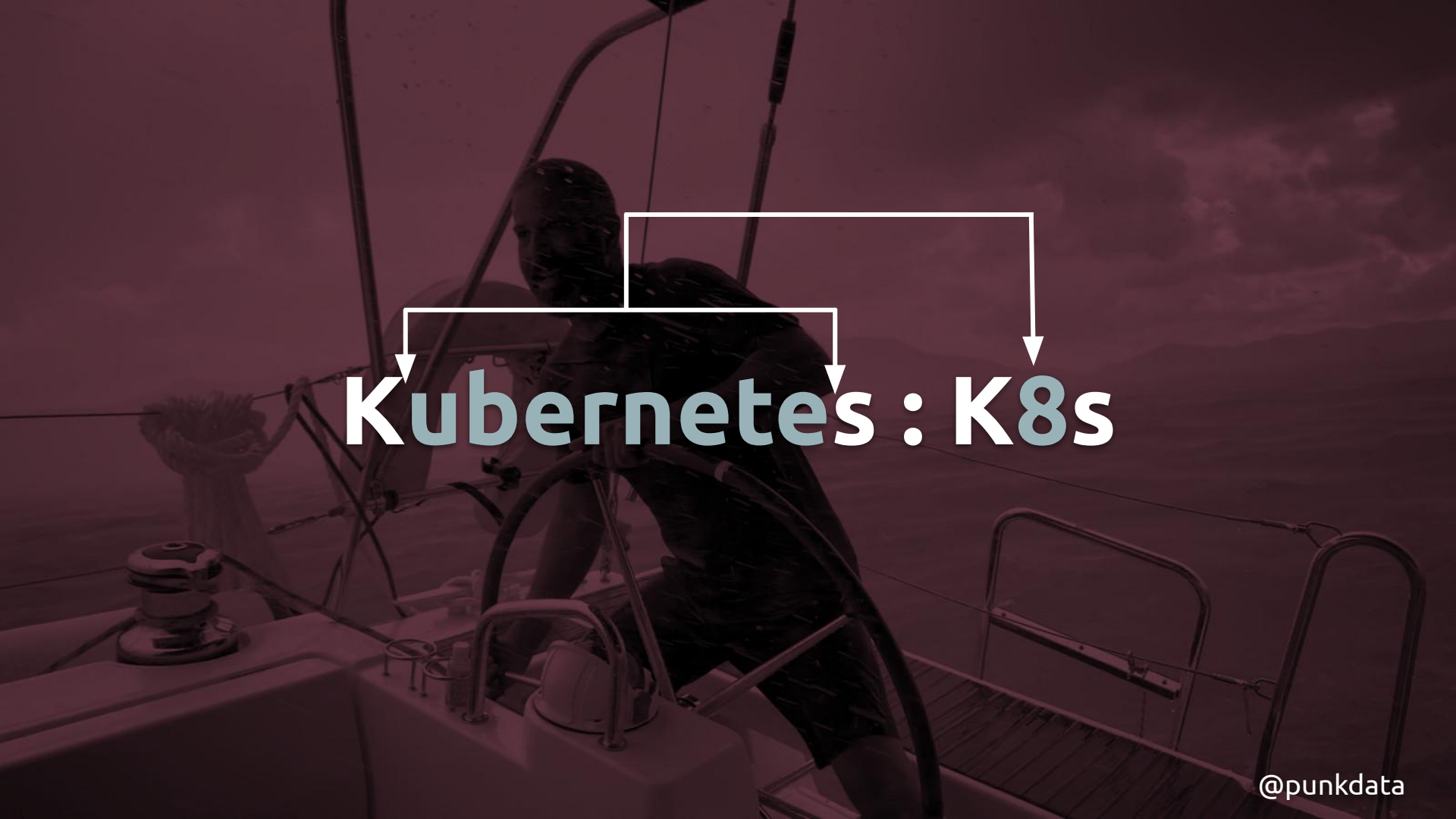
cut : infrastructure : costs



improved : availability : scalability

The background of the slide features the Kubernetes logo, which is a dark red hexagon containing a lighter red ship's wheel. The text "intro : Kubernetes" is centered over this logo.

intro : Kubernetes

A person is seen from the chest up, leaning over the side of a boat. They are wearing a dark, patterned shirt. The background shows a body of water and a cloudy sky. A white diagrammatic overlay is present, consisting of a horizontal line with three downward-pointing arrows. The text 'Kubernetes : K8s' is centered over the middle arrow.

Kubernetes : K8s



traditional: deployments

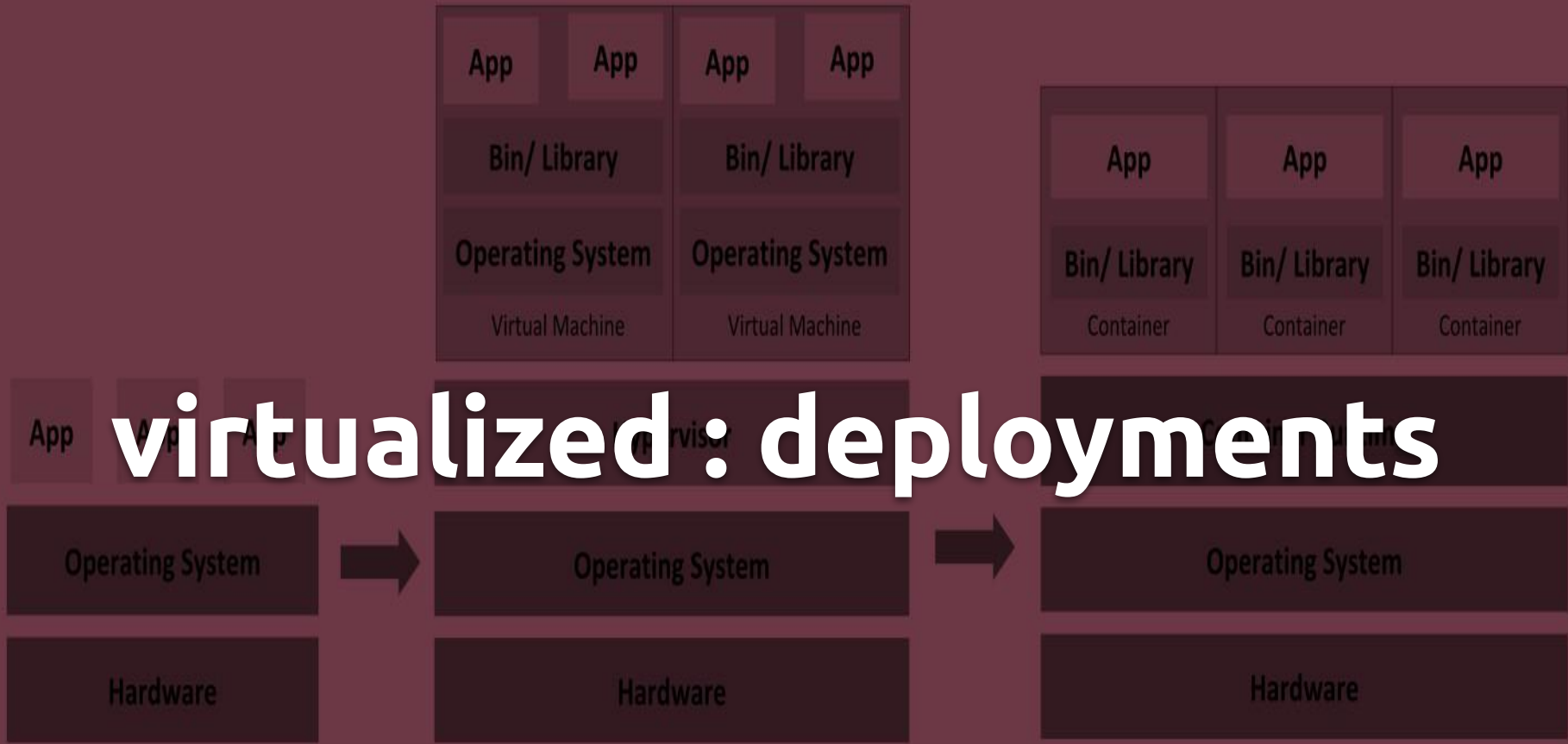


Traditional Deployment

Virtualized Deployment

Container Deployment

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virtualized : deployments

Traditional Deployment

Virtualized Deployment

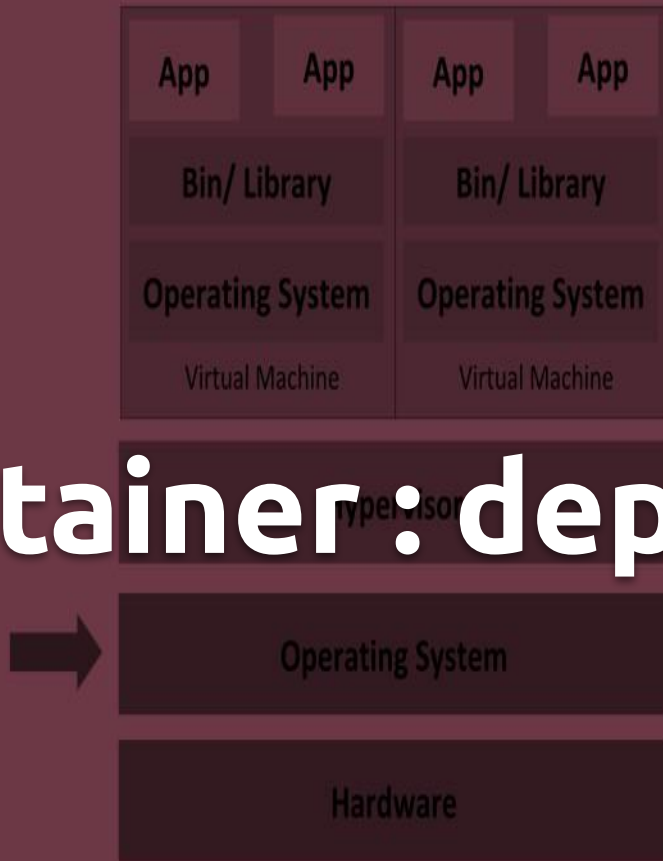
Container Deployment

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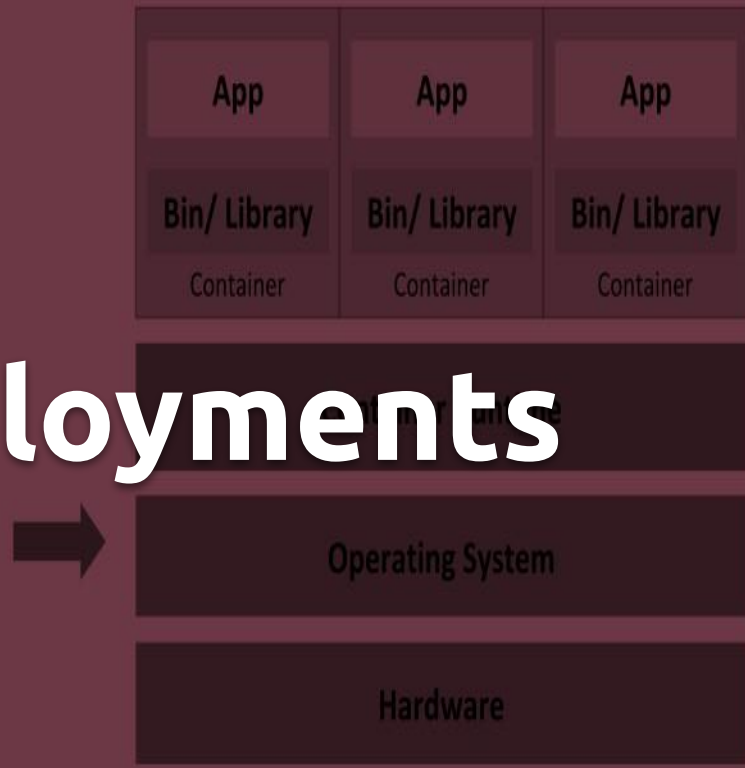
container: deployments



Traditional Deployment



Virtualized Deployment



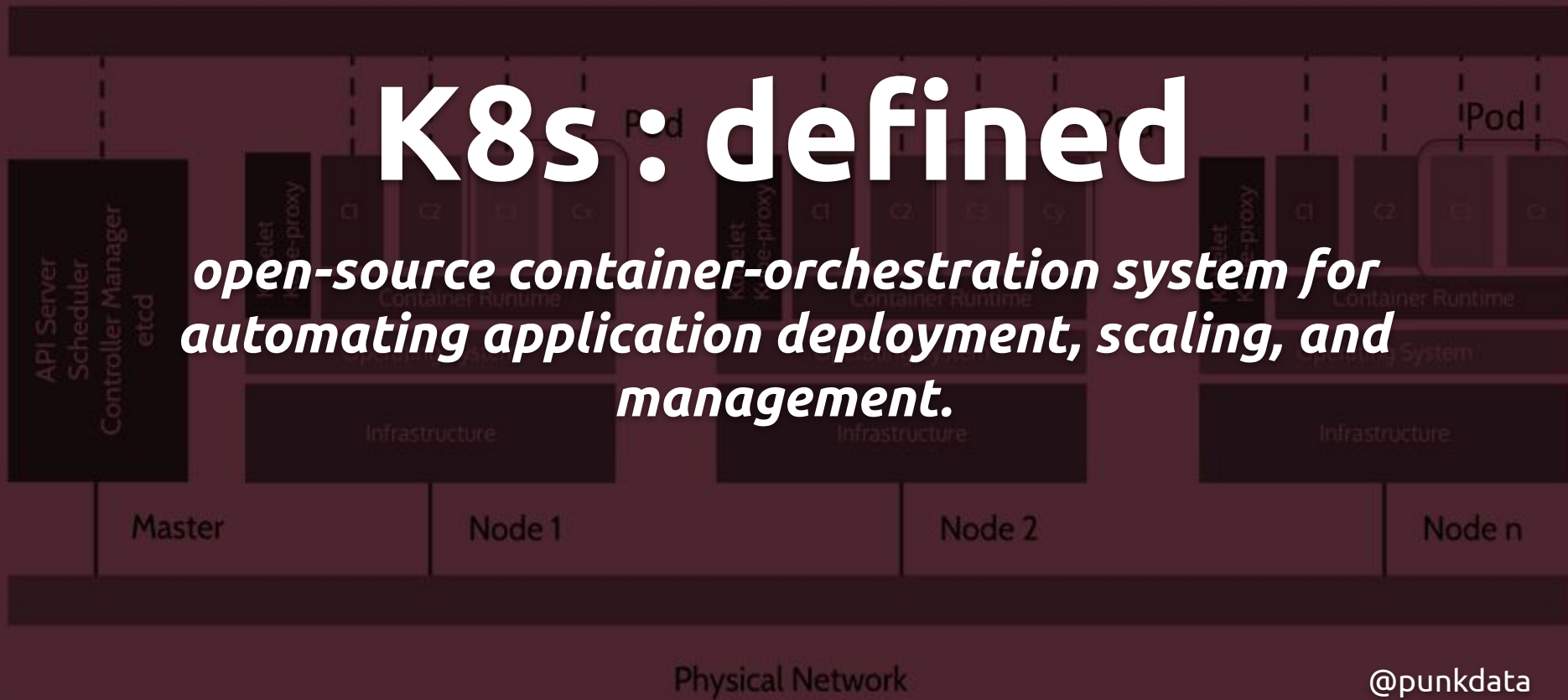
Container Deployment

Kubernetes Architecture

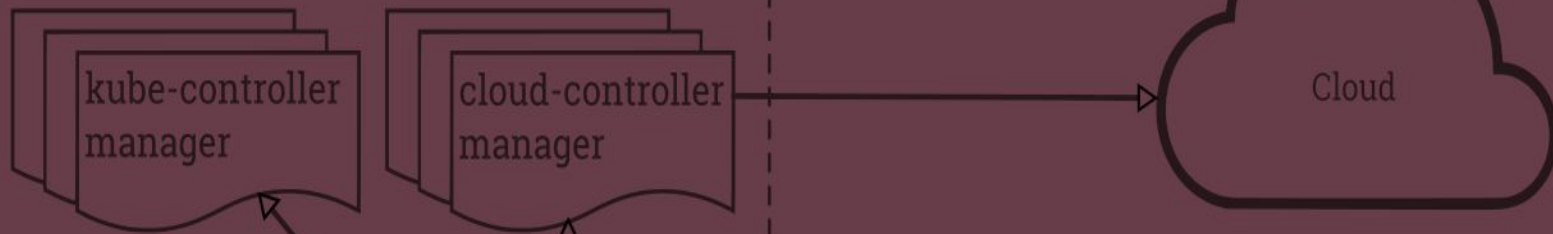
Overlay Network (Flannel/OpenVSwitch/Weave)

K8s : defined

open-source container-orchestration system for automating application deployment, scaling, and management.



Kubernetes Control Plane



K8s : decomposed



kube-scheduler

kubelet

kube-proxy



kubelet

kube-proxy

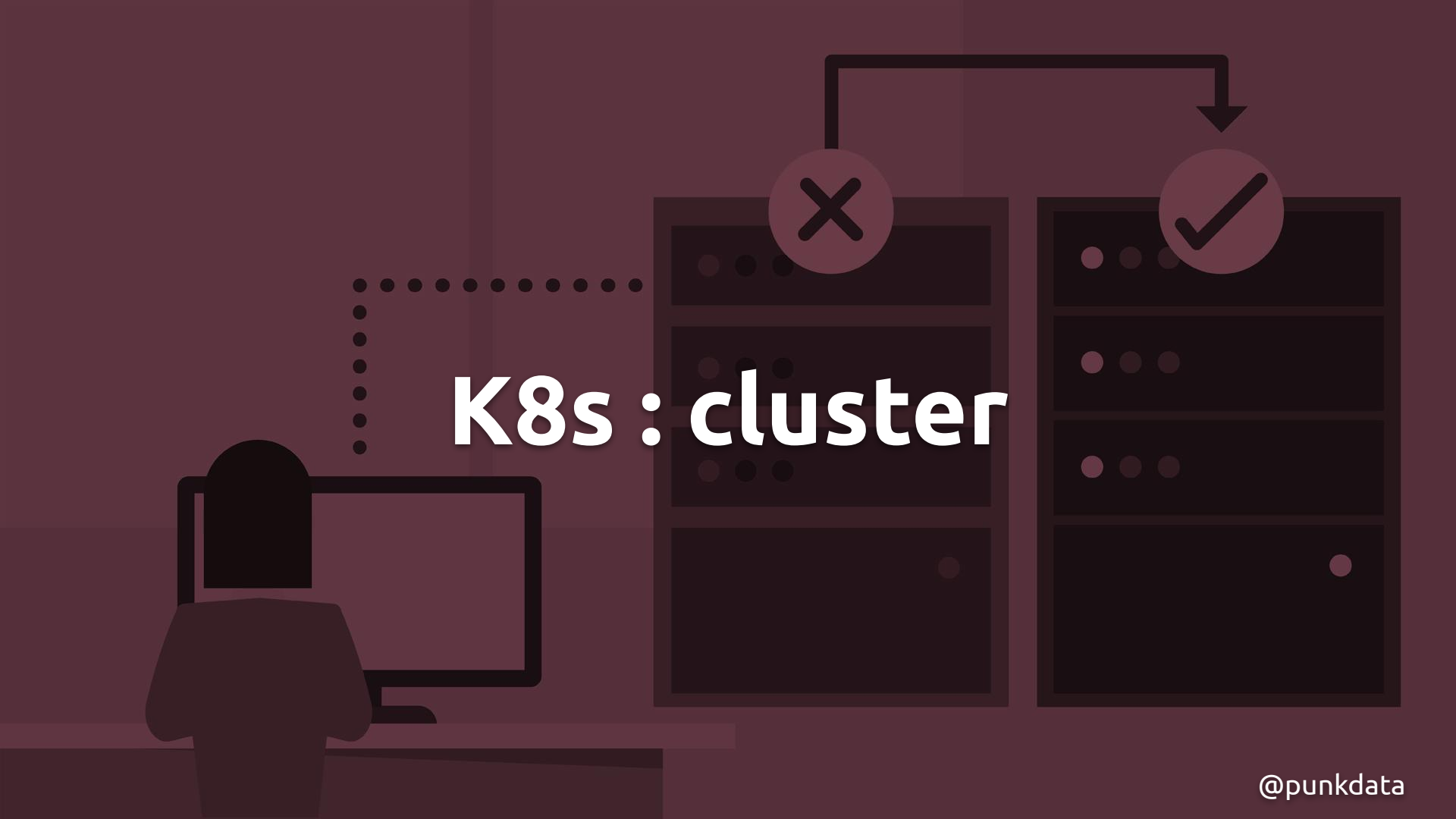


kubelet

kube-proxy



Kubernetes Nodes



K8s : cluster



Master
node

Worker node

Pod

Container

Container

K8s : worker : nodes

Worker node

Pod

Container

Container



Master
node

Worker node

Pod

Container

Container

K8s → pods

Worker node

Pod

Container

Container



Master
node

Worker node

Pod

Container

Container

K8s : control : plane
components

C

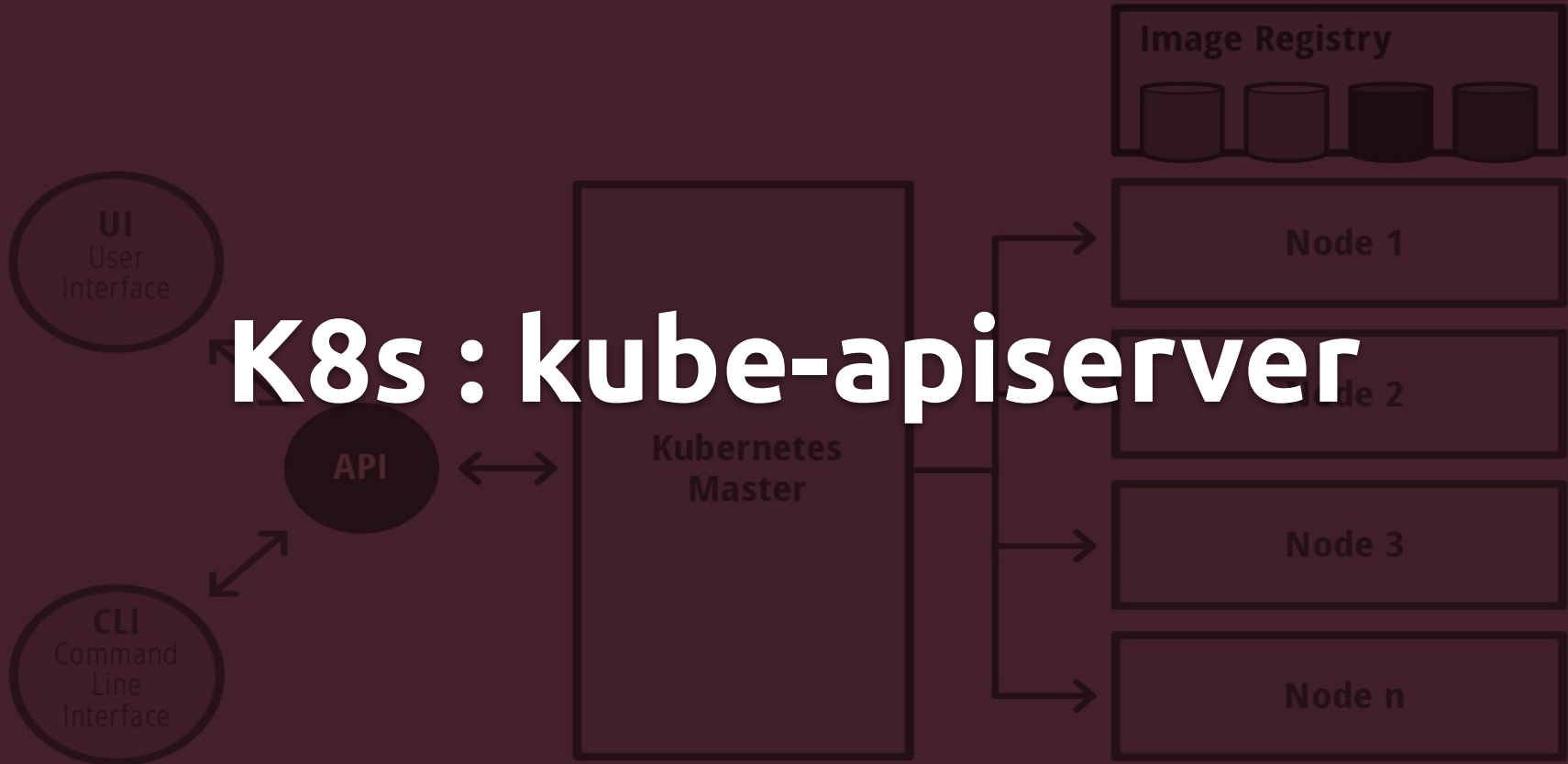
Worker node

Pod

Container

Container

K8s : kube-apiserver

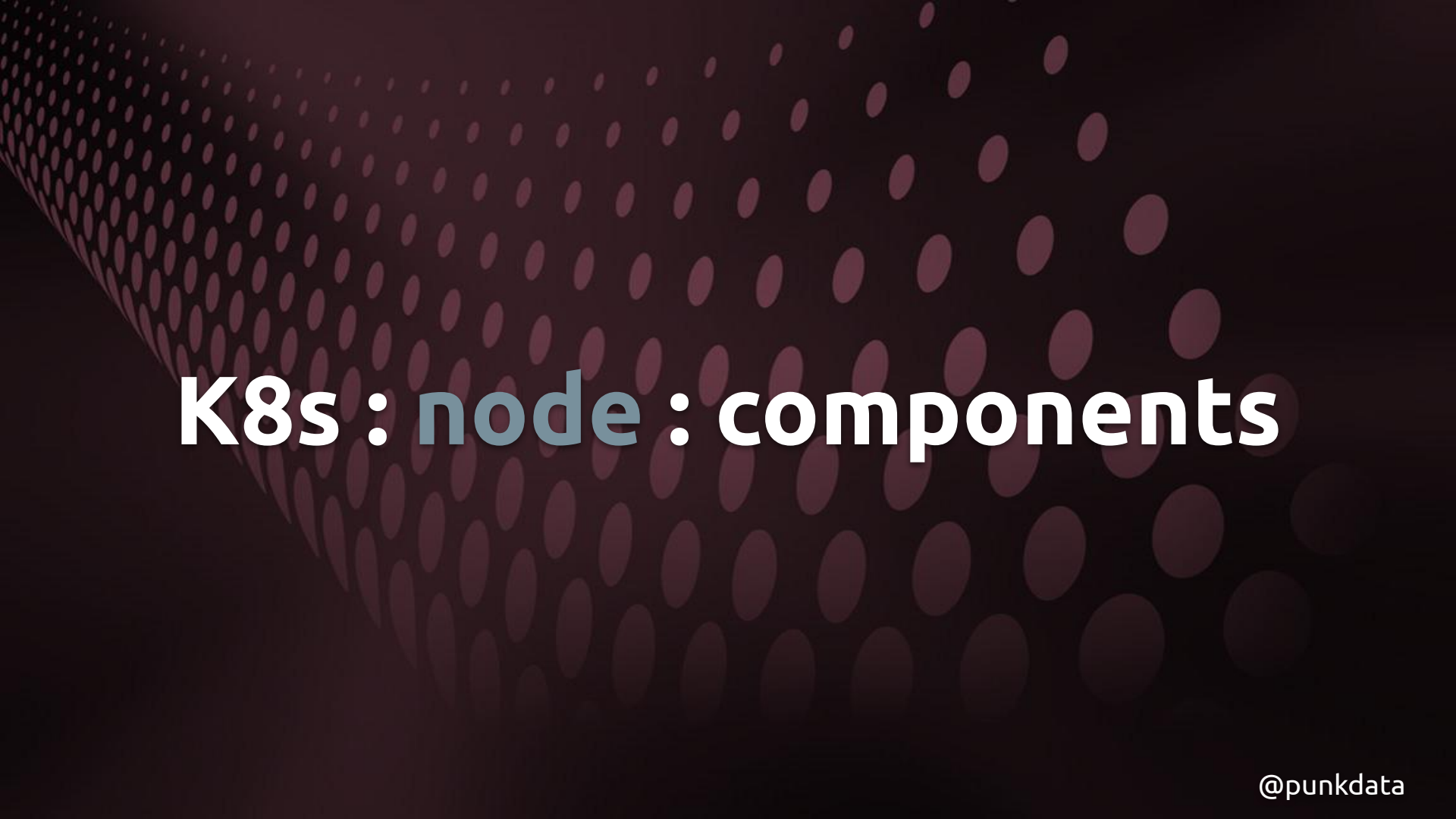


The background features a dark, textured surface with a grid of small, light-colored dots. The dots are arranged in a perspective that creates a sense of depth, appearing to recede into the distance. The overall color palette is dark, with the dots providing a subtle contrast.

K8s : etcd

K8s : kube-scheduler

K8s : kube-controller-manager

The background features a dark, textured surface with a pattern of small, light-colored dots. These dots are arranged in a way that creates a sense of depth and perspective, resembling a funnel or a series of concentric, slightly offset circles that recede into the distance. The overall color palette is dark, with the dots providing a subtle contrast.

K8s : node : components

K8s : kubelet

The background features a dark, textured surface with a grid of small, light-colored dots. The dots are arranged in a perspective that creates a sense of depth, appearing to recede into the distance. The overall color palette is dark, with the dots providing a subtle contrast.

K8s : kube-proxy

K8s : container : runtime

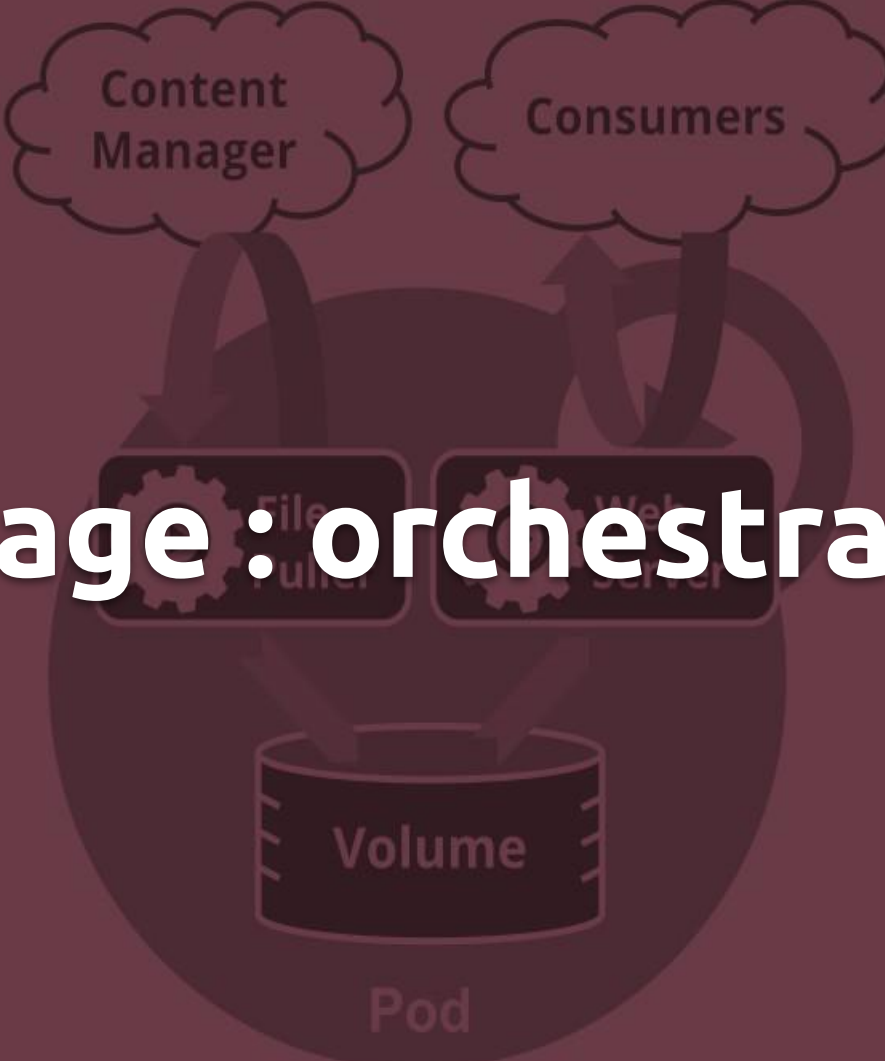
A woman with dark hair is lying in a hammock, looking upwards with a serene expression. She is wearing a dark-colored top. The background consists of trees and foliage, all rendered in a monochromatic purple hue. The text "benefits : K8s" is overlaid in the center in a white, bold, sans-serif font.

benefits : K8s



service : discovery
load : balancing

storage : orchestration

A diagram illustrating storage orchestration. At the top, two cloud shapes represent 'Content Manager' and 'Consumers'. Below them, a large circle represents a 'Pod'. Inside the Pod, there are two rectangular boxes: 'File Puller' and 'Web Content Server', each with a gear icon. Below these boxes is a cylinder labeled 'Volume'. Arrows show data flow: from 'Content Manager' to 'File Puller', from 'File Puller' to 'Volume', from 'Volume' to 'Web Content Server', and from 'Web Content Server' to 'Consumers'. There are also feedback loops from 'Consumers' back to 'Web Content Server' and from 'Web Content Server' back to 'File Puller'.



automated : rollouts : rollbacks



automatic : bin : packing



self : healing



secret : configuration management

The background features a stylized illustration of two people, a woman on the left and a man on the right, facing each other in conversation. The woman has short dark hair and is wearing a dark top. The man has short dark hair and is wearing a dark shirt, with his right hand raised in a gesturing motion. Two speech bubbles, each containing three dots, are positioned between them. Large, dark, semi-transparent arrows are present: one pointing left on the left side and one pointing right on the right side, framing the central scene.

implementing : K8s

An illustration featuring two stylized human figures, a woman on the left and a man on the right, facing each other as if in conversation. The woman has short dark hair and is wearing a dark top. The man has short dark hair and is wearing a dark t-shirt, with his right hand raised in a gesturing motion. Between them are two speech bubbles, each containing three dots. The background is a solid dark purple color, overlaid with a large, light purple arrow pointing left on the upper half and a large, light purple arrow pointing right on the lower half. Centered over the figures is the text 'skill : sets' in a white, bold, sans-serif font.

skill : sets



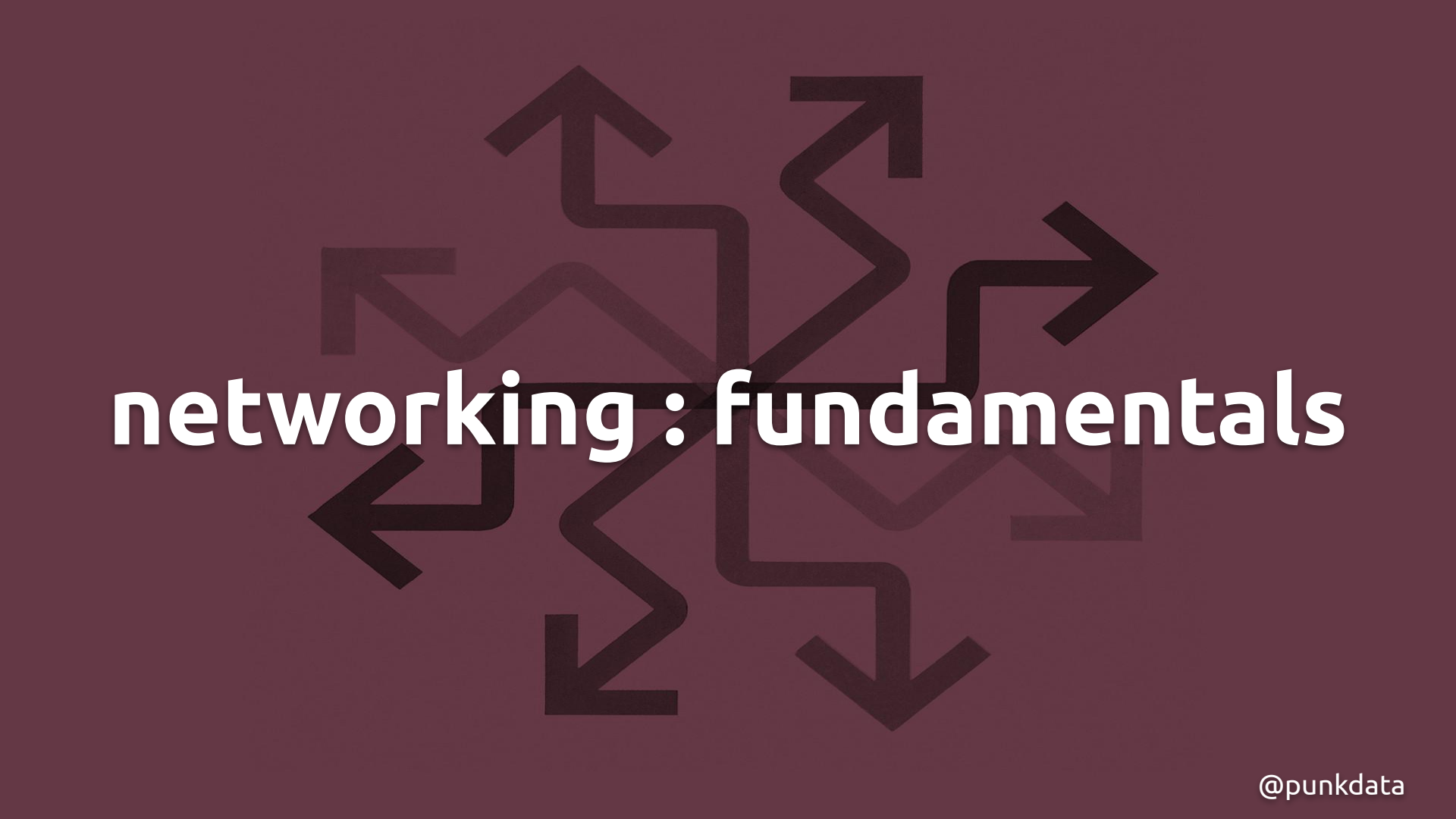
security : rbac



yaml

A stylized illustration of a whale with a stack of shipping containers on its back, floating on waves. The whale is dark blue with a white eye and a small white fin. The containers are stacked in a pyramid shape, with the top container being a different color. The waves are represented by simple, curved lines.

deep : understanding : containers

The background features a dark maroon color with a faint, large-scale network diagram. This diagram consists of several thick, dark arrows that originate from a central point and branch outwards in various directions, some following straight paths while others are more jagged or zig-zagging, symbolizing the interconnected nature of a network.

networking : fundamentals

application : programming : interfaces

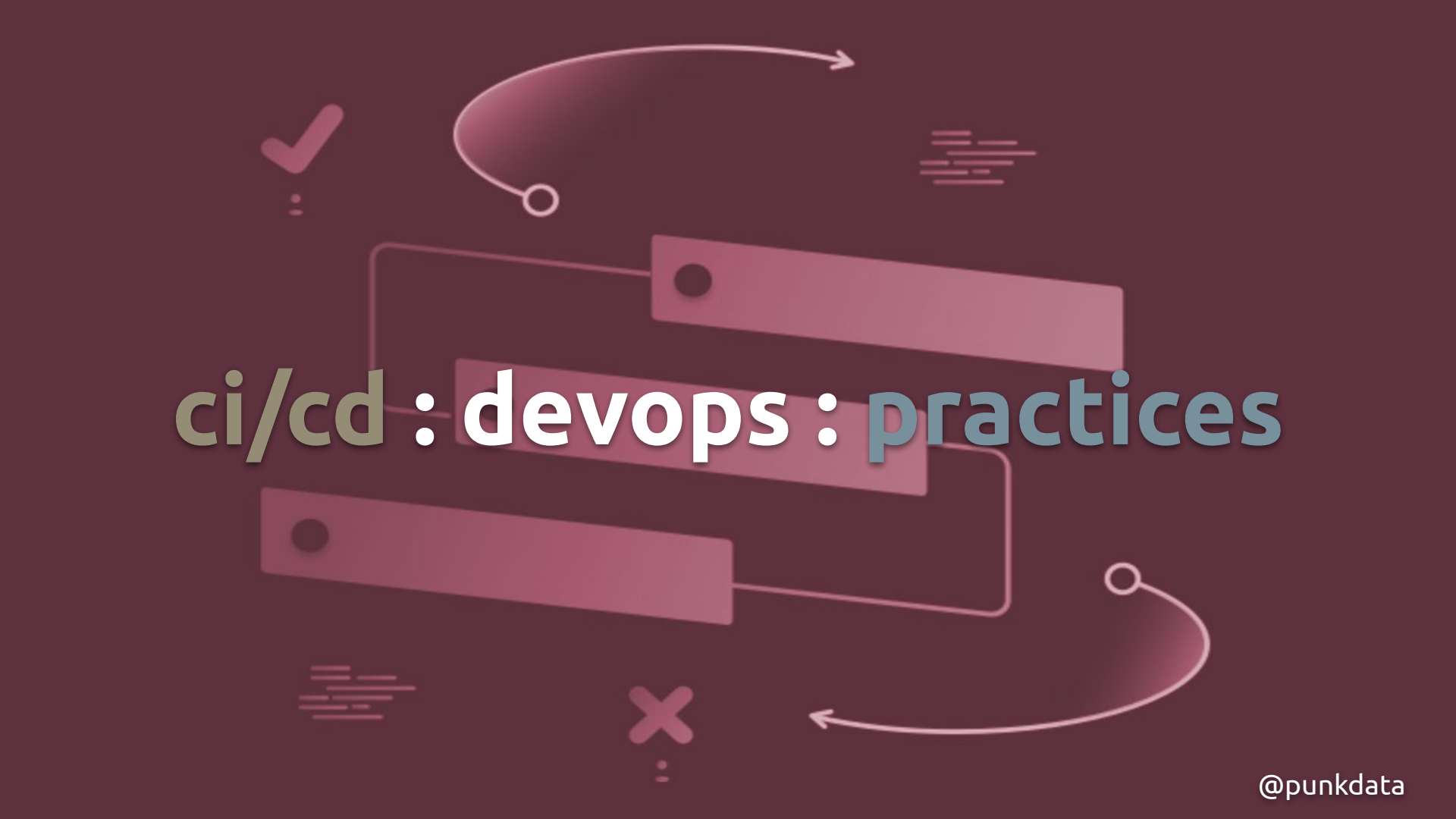


The diagram illustrates a Pod architecture. A large circle represents the Pod, which contains two rectangular boxes: 'File Puller' and 'Web Server'. Both boxes have a gear icon with a play button inside. Below these boxes is a cylinder labeled 'Volume'. Arrows show data flow: from 'Content Manager' (in a cloud) to 'File Puller', from 'File Puller' to 'Volume', from 'Volume' to 'Web Server', and from 'Web Server' to 'Consumers' (in a cloud). There is also a feedback arrow from 'Consumers' back to 'Web Server'.

persistence : storage

monitoring : logging

infrastructure : as : code

The background is a solid dark red color. It features several abstract, light red geometric shapes and icons. At the top, there is a curved arrow pointing right. To its left is a checkmark icon. To its right are several horizontal lines of varying lengths. In the center, there are two overlapping rectangular blocks, one slightly offset from the other. Below these, there is another curved arrow pointing left. At the bottom, there is an 'X' icon and more horizontal lines. The text 'ci/cd : devops : practices' is centered over the middle of the image.

ci/cd : devops : practices

secure : test : build : deploy
monitor : iterate



automate : everything

SEARCH



Innovation
Branding
Solution
Marketing
Analysis
Ideas
Success
Management

Logistics

INDUSTRY

Manufacturing
Supply chain
Production
Cargo
Customs
Inventory
Management
Freight

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flavors : of : K8s



self : hosted : K8s
(more **difficult**)

The background is dark with a hand pointing upwards from the bottom right. Numerous semi-transparent, light-colored rectangles are scattered across the scene, appearing to float or be part of a digital environment.

managed : K8s : services

(gke : eks : aks : lke : dke)



developer : K8s : resources

minik8s : <https://microk8s.io/>

minikube : <https://kubernetes.io/docs/tasks/tools/install-minikube/>

community : <https://kubernetes.io/community/>

A top-down view of a wooden table with several people's hands visible. The table is covered with various circular and speech bubble icons representing digital concepts like social media, technology, and communication. In the center, the text "thank : you" is written in white. The overall color scheme is a monochromatic purple/maroon.

thank : you