Kubernetes Assoc Prof Panche Ribarski, PhD | Assoc Prof Milos Jovanovik, PhD Continuous Integration and Delivery 2023 Kubernetes Continuous Integration and Delivery 2023 Services - Pods get updated, destroyed or just plain fail - Pods are immutable - New Pods will be created in their place - That means new IP - Pod DNS is tied to the unique Pod name - who would keep a list of running Pods Not us - Enter Services - stable IP - stable DNS - stable ports 2 Kubernetes Continuous Integration and Delivery 2023 Service object in Kubernetes 3 Kubernetes Continuous Integration and Delivery 2023 Service benefits - Deployments can overlook Pods - scale - update (Rollout) - revert (Rollback) - Everyone else need a stable handle that links to those Pods from the Deployment - Create a Service object - will point to all the Pods (even LB them) - keep a list of (healthy) Pods - and their IP’s - index Pods via - labels - selectors 4 Kubernetes Continuous Integration and Delivery 2023 Service coupling to Pods 5 Kubernetes Continuous Integration and Delivery 2023 Service selectors - Service will look for Pods with the listed selectors: - all listed tags in selectors must be labels in the Pods 6 Kubernetes Continuous Integration and Delivery 2023 Service selectors - Your Pods can have extra labels 7 Kubernetes Continuous Integration and Delivery 2023 Our first Service 8 Kubernetes Continuous Integration and Delivery 2023 EndpointSlice object - created by the Service object - Kubernetes curates EndpointSlice lists - constantly watch Services with their selectors and Pods with their labels - all healthy Pods matching selectors are added to the Service’s EndpointSlice object - When we access the Service IP , our request gets routed through the IP’s from the EndpointSlice - You can query KubeAPI and directly get EndpointSlice content - in a Microservice worlds, this is called Service Discovery 9 Kubernetes Continuous Integration and Delivery 2023 Access a Service from inside - Service type: ClusterIP - our Service gets an IP from the internal K8S network overlay - this means our Service can be accessed only from inside - DNS - Services get assigned A and AAAA records: - my-svc