VSTS / TFS automated Release Pipelines for Web Applications with Docker

Marc Müller
Principal Consultant

marc.mueller@4tecture.ch
@muellermarc
www.4tecture.ch

MVP Microsoft Most Valuable Professional

4tecture
empower your software solutions

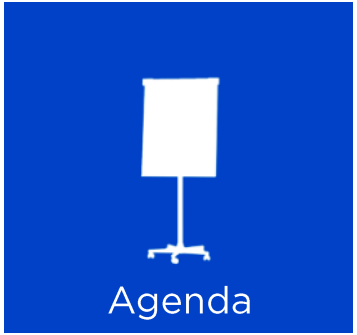
Marc Müller
Principal Consultant
@muellermarc

Microsoft Most Valuable Professional

4tecture©
empower your software solutions

Agenda

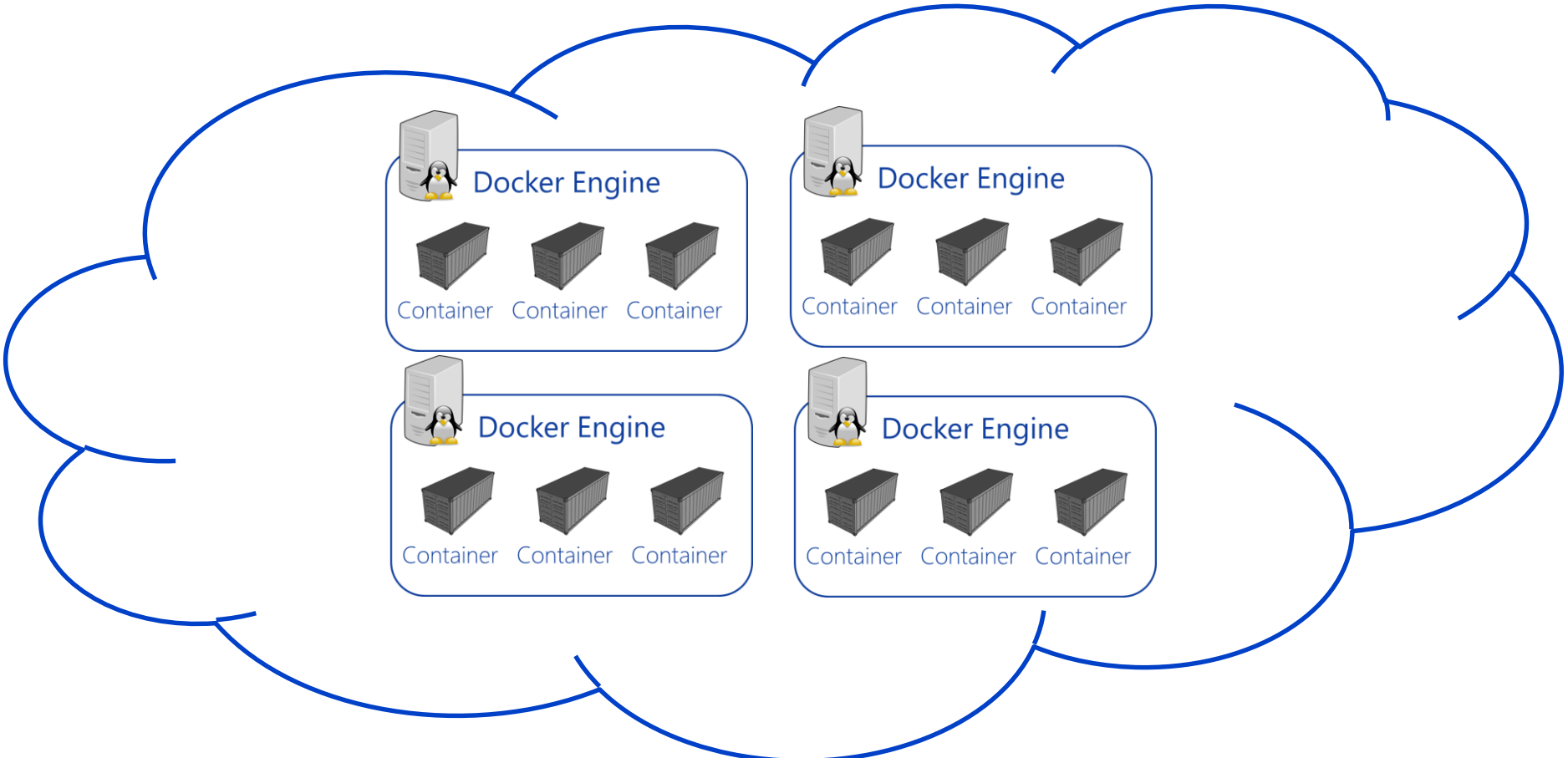
- Intro Docker Cluster
- Kubernetes
- Kubernetes Infrastructure in Azure
  - Demo: Setup Kubernetes with ACS
  - Demo: Setup Container Registry
- VSTS Build and Release
  - Demo: Build Infrastructure
  - Demo: Build Process / Release Process
- Optional: Let’s Encrypt Controller



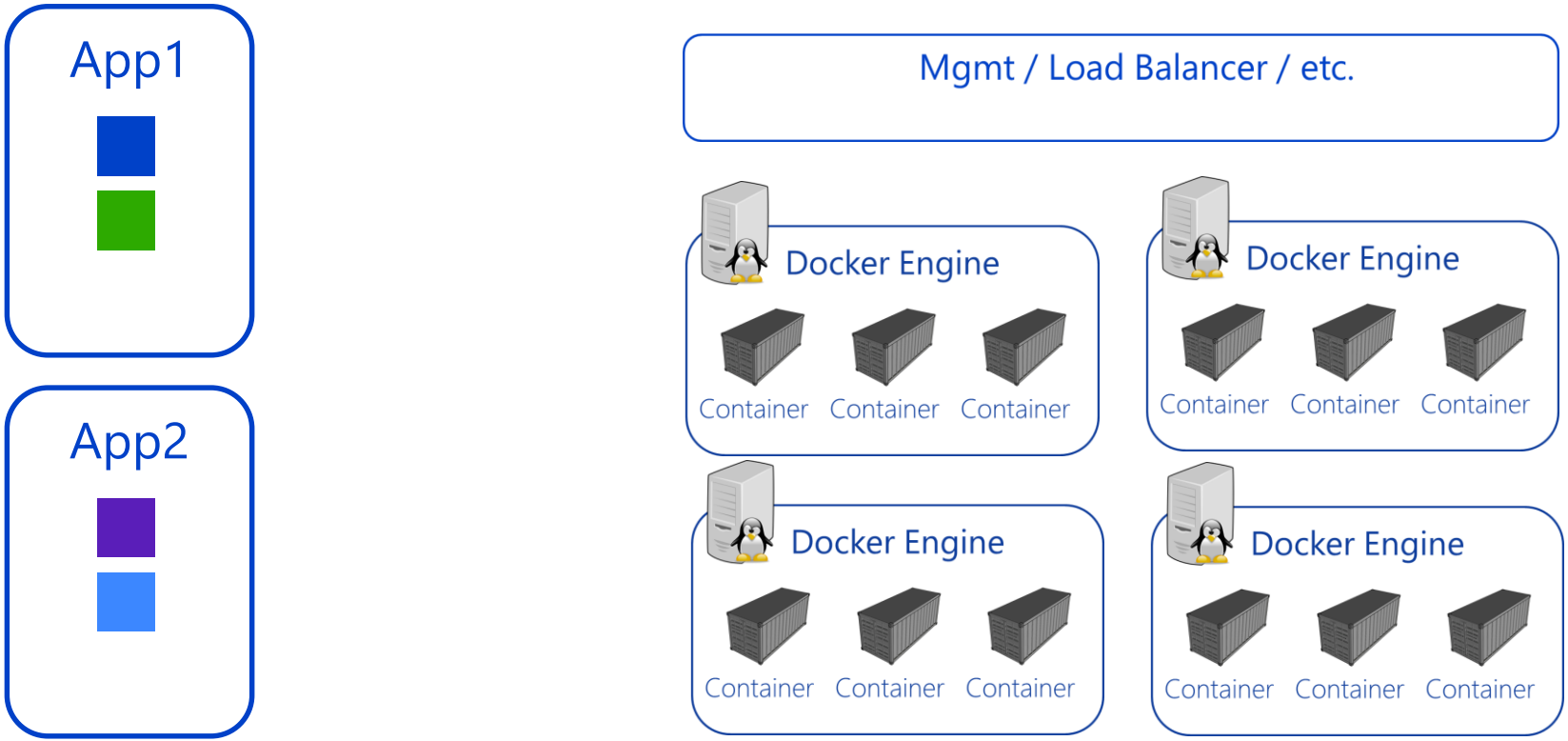
Intro

4tecture®
empower your software solutions

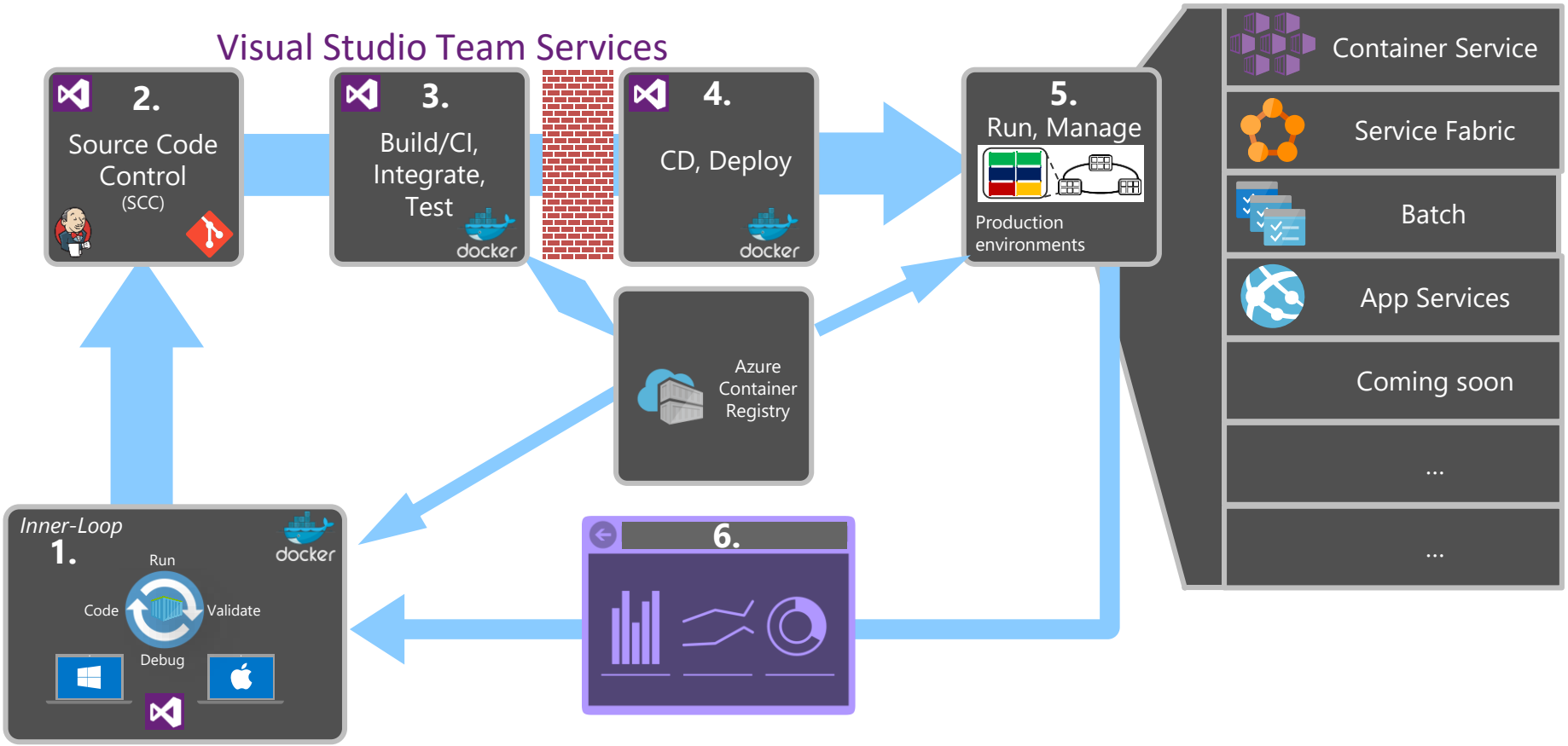
Environments – Hosting / Cloud



Cluster Management

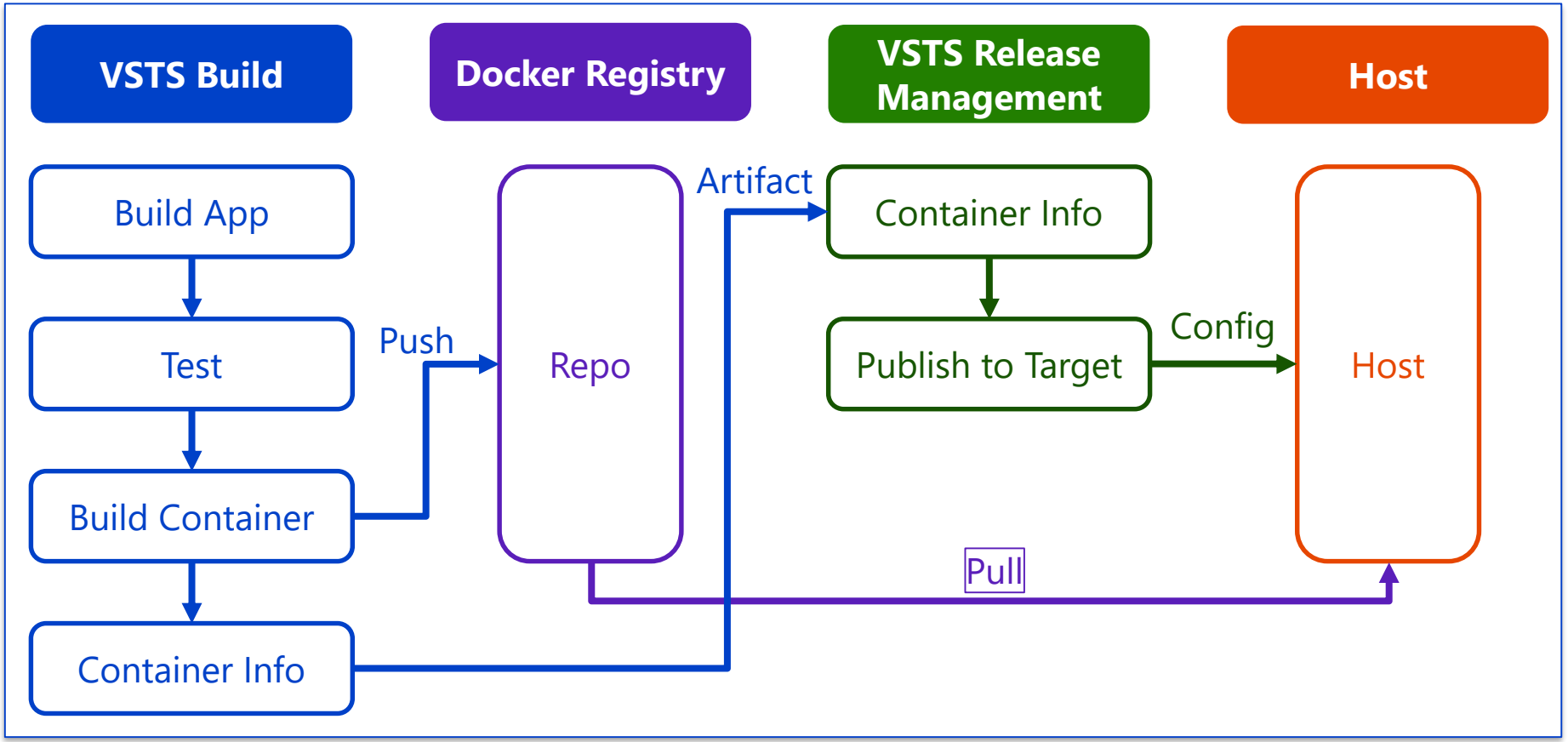


Containerized Workflow



https://sec.ch9.ms/sessions/69613110-c334-4f25-bb36-08e5a93456b5/206BuildDebugDeployASPNETCorewithDocker.pptx

Docker CI / CD

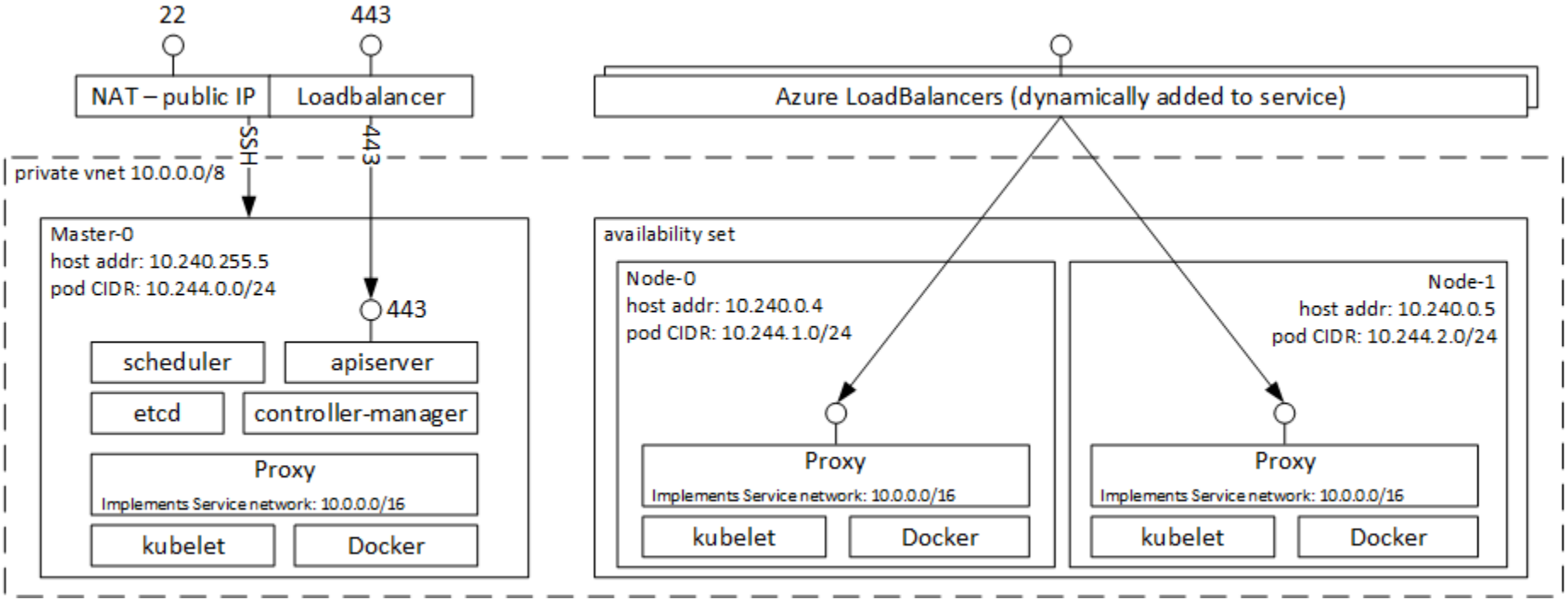

VSTS Build
Docker Registry
VSTS Release Management
Host
Build App
Test
Build Container
Container Info
Push
Repo
Artifact
Container Info
Publish to Target
Config
Host
Pull

Azure Container Services

Docker Swarm
DC/OS
Kubernetes

Based on Azure Container Service Engine generates ARM (Azure Resource Manager) templates for Docker enabled clusters

ACS with Kubernetes



Kubernetes Components

Master(s)

- API Server
  Frontend into the Kubernetes control plane.
- Cluster Store (etcd)
  Persistent storage for cluster configuratoin (k/v)
- Controller Manager
  Makes sure the actual state of the cluster matches the desired state.
- Scheduler
  Watches for workloads and assigns them to nodes.

Nodes

- Kubelet
  Kubernetes Agent (the actual node)
- Container Runtime
  Docker / CoreOS rkt
- Kube-Proxy
  “Network Brain” of the node – makes sure every Pod gets it’s own unique IP address

Kubernetes – Desired State

Declarative Model and Desired State

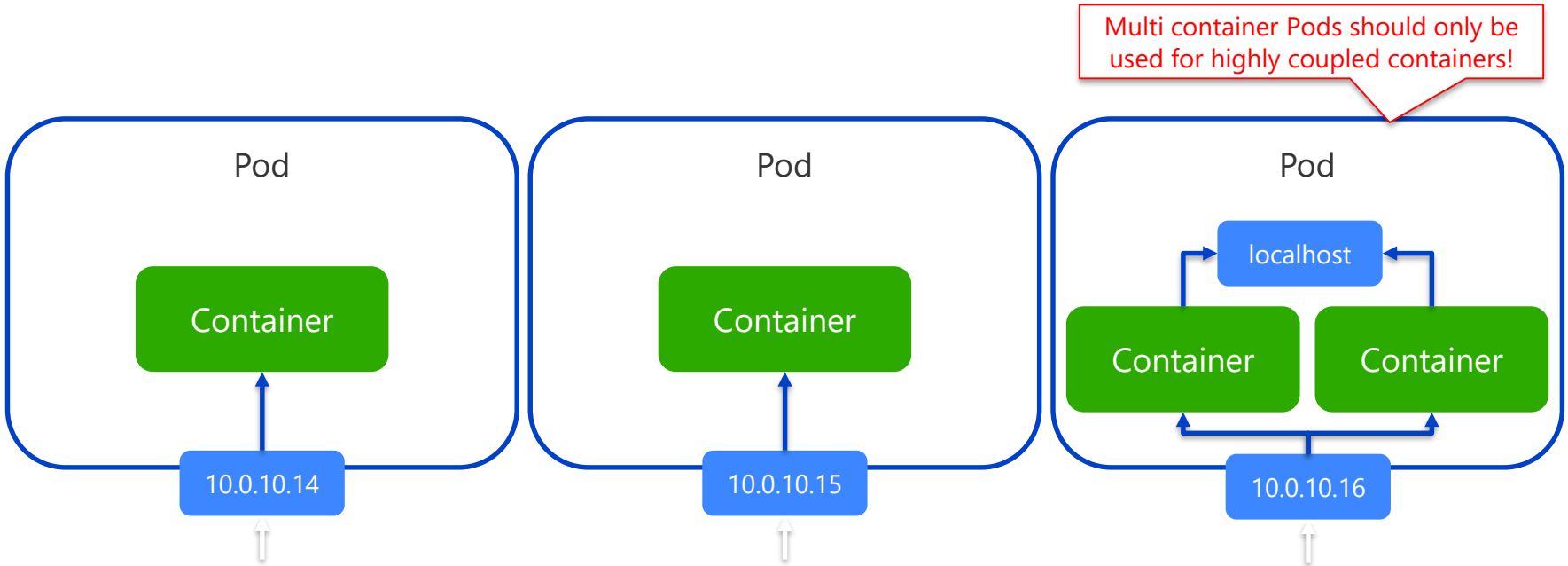
- Declare the desired state in manifest file
- Feed the manifest to the API Server
- Kubernetes implements it on the cluster
- Watches that the cluster doesn't vary from the desired state

Manifests are written in YAML or JSON

kubectl is the CLI to Kubernetes

Pods and Containers

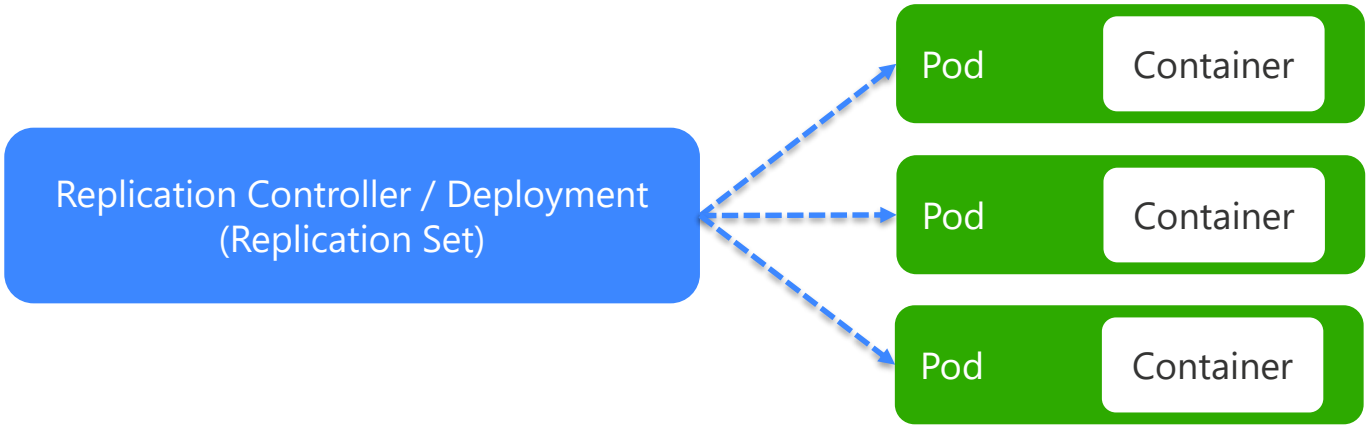
- You cannot run a container directly in Kubernetes
- Containers run always in a Pod



Deploy Pods

We don’t deploy Pods directly

- Replication Controller
- Deployment / Replication Set



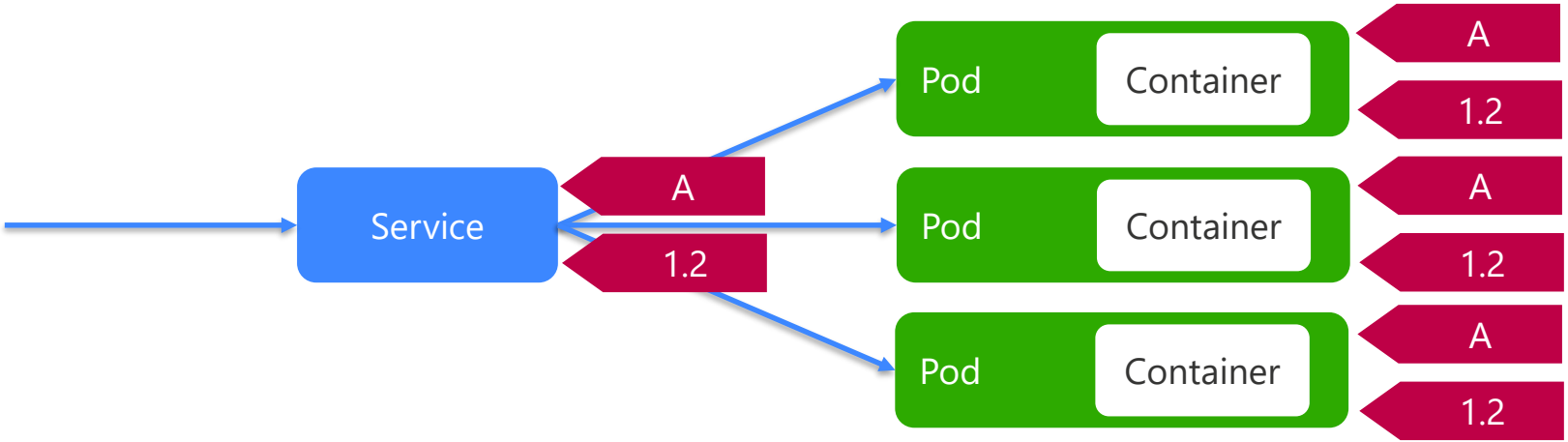
Deployments

Deployment adds new features to replica sets

- Powerful update model
- Rolling Updates
- Simple version-controlled rollbacks

Services

- Pods are mortal
- IP Addresses of Pods may change
- Services provide stable networking abstraction for multiple Pods
  - Stable network endpoint
  - Loadbalancing
- Labels are used to attach Pods to Services



Kubernetes Features

- Automatic binpacking
- Self-healing
- Horizontal scaling
- Service discovery and load balancing
- Automated rollouts and rollbacks
- Secret and configuration management
- Storage orchestration
- Batch execution

Infrastructure

Azure Container Services

4tecture
empower your software solutions

Azure Container Service

ACS = ARM Templates

3 types of Orchestrators

- DC/OS with Marathon
- Docker Swarm
- Kubernetes

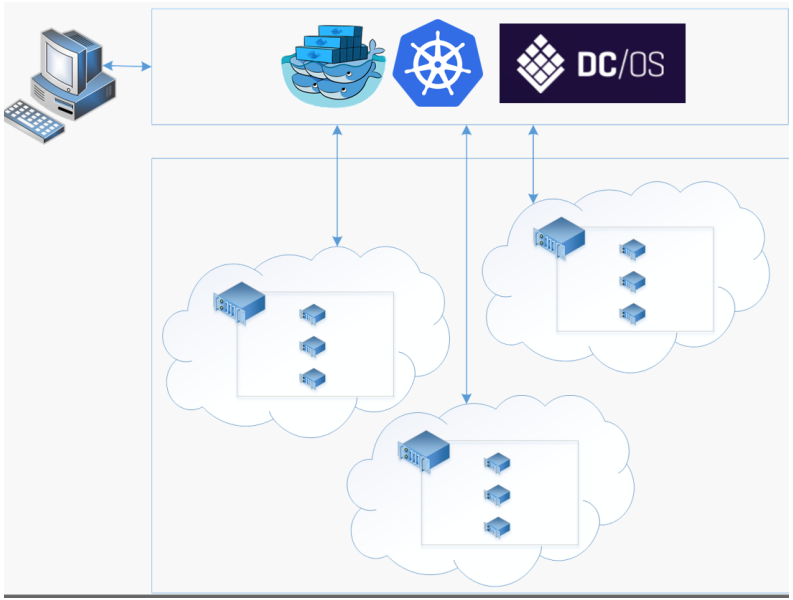
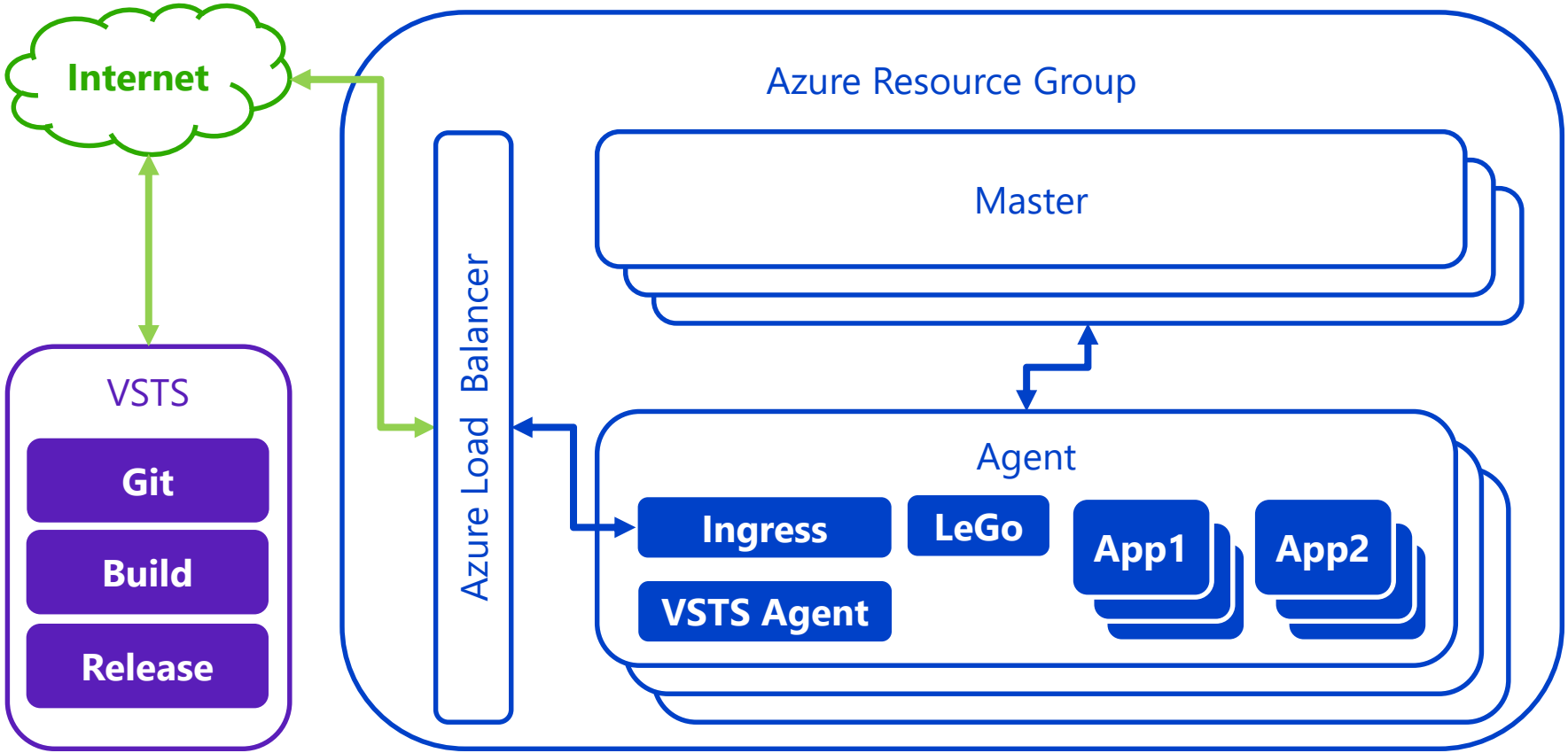


Image Source: https://docs.microsoft.com/en-us/azure/container-service/container-service-intro

Simplified ACS Kubernetes Setup

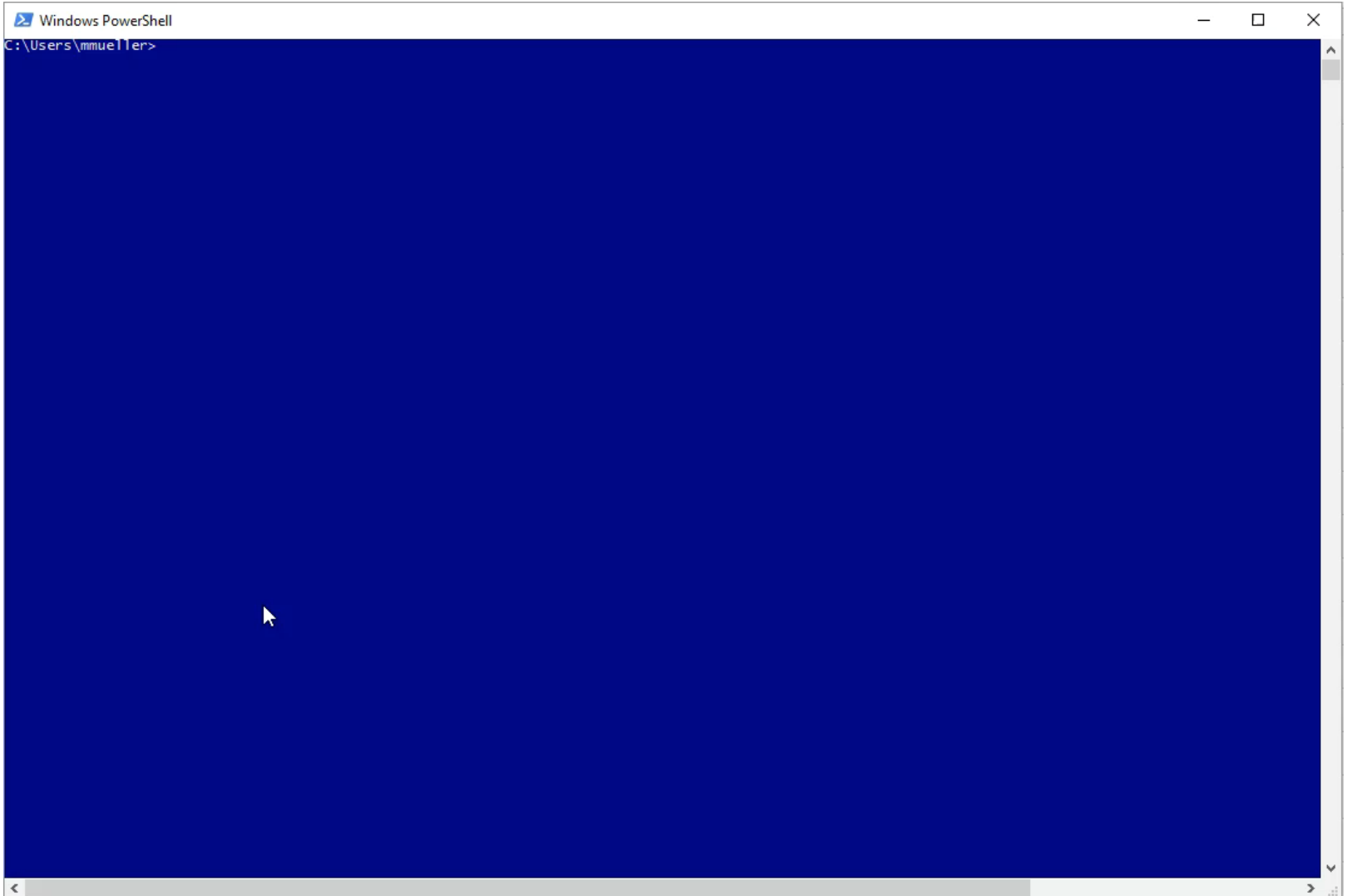


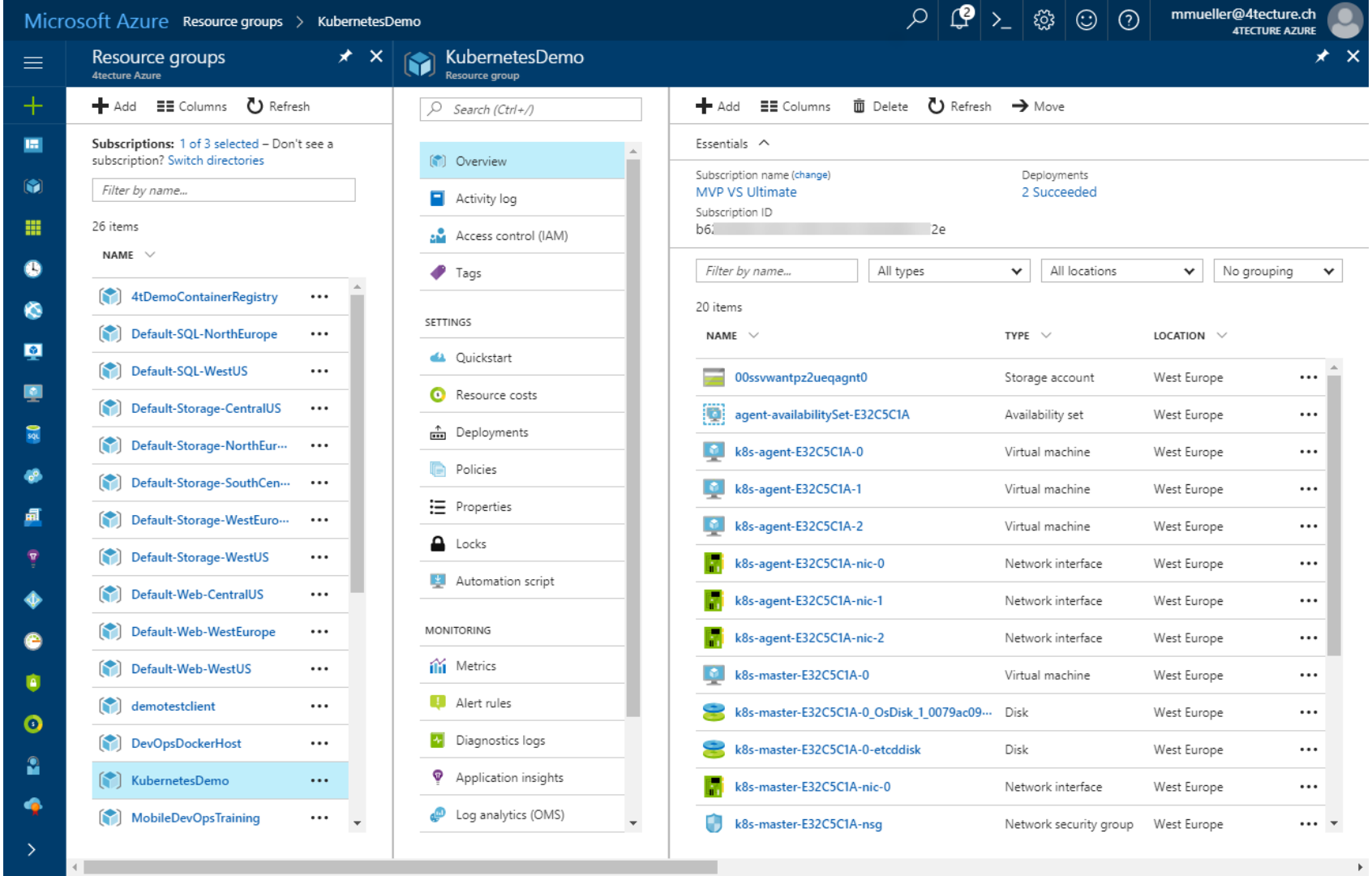
Demo

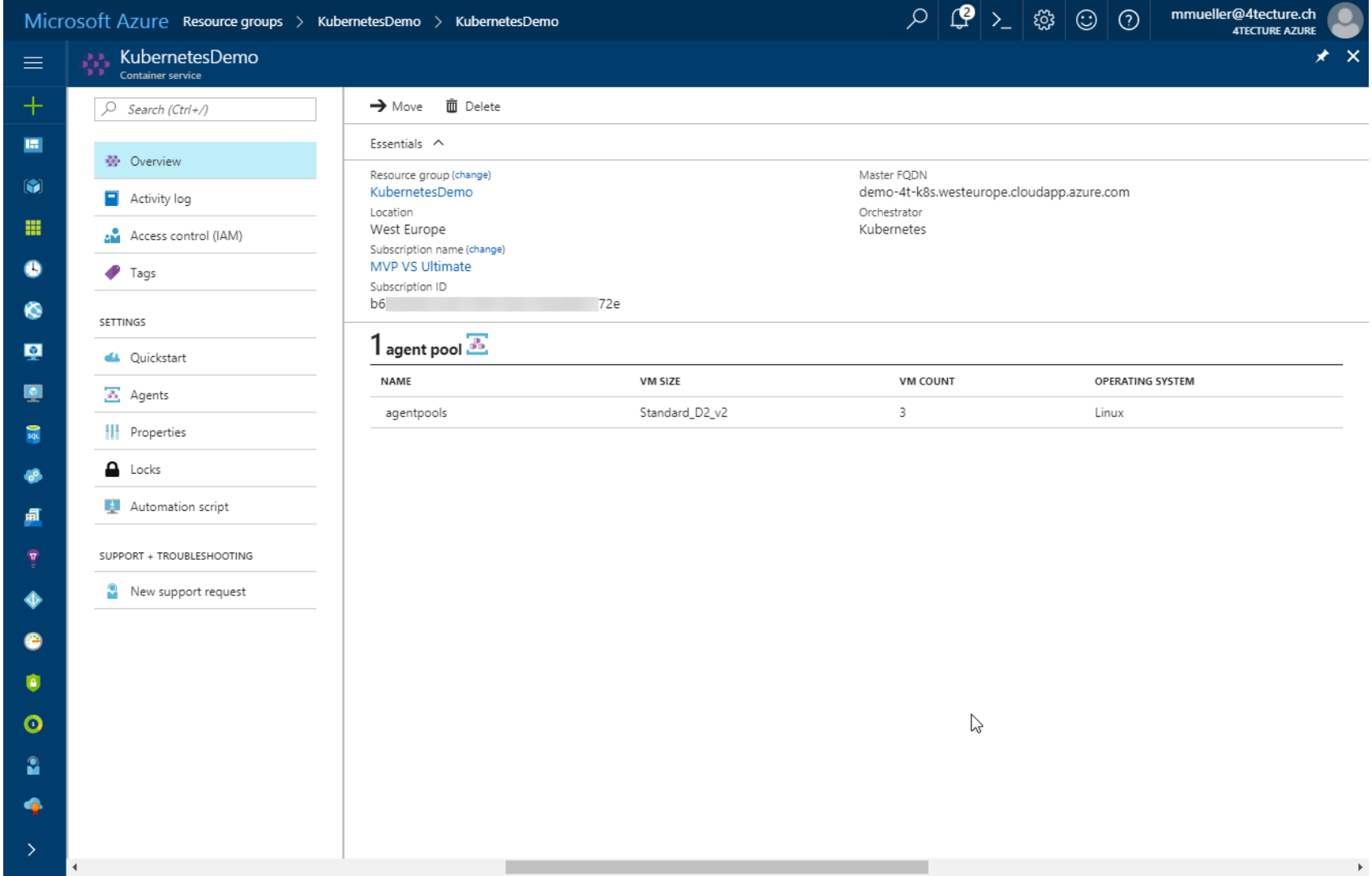
ACS Infrastructure

Demo Content

- Setup Azure Resource Group
- Use Azure CLI
- Create Keys on the fly (just for Demo)
- View generated resources

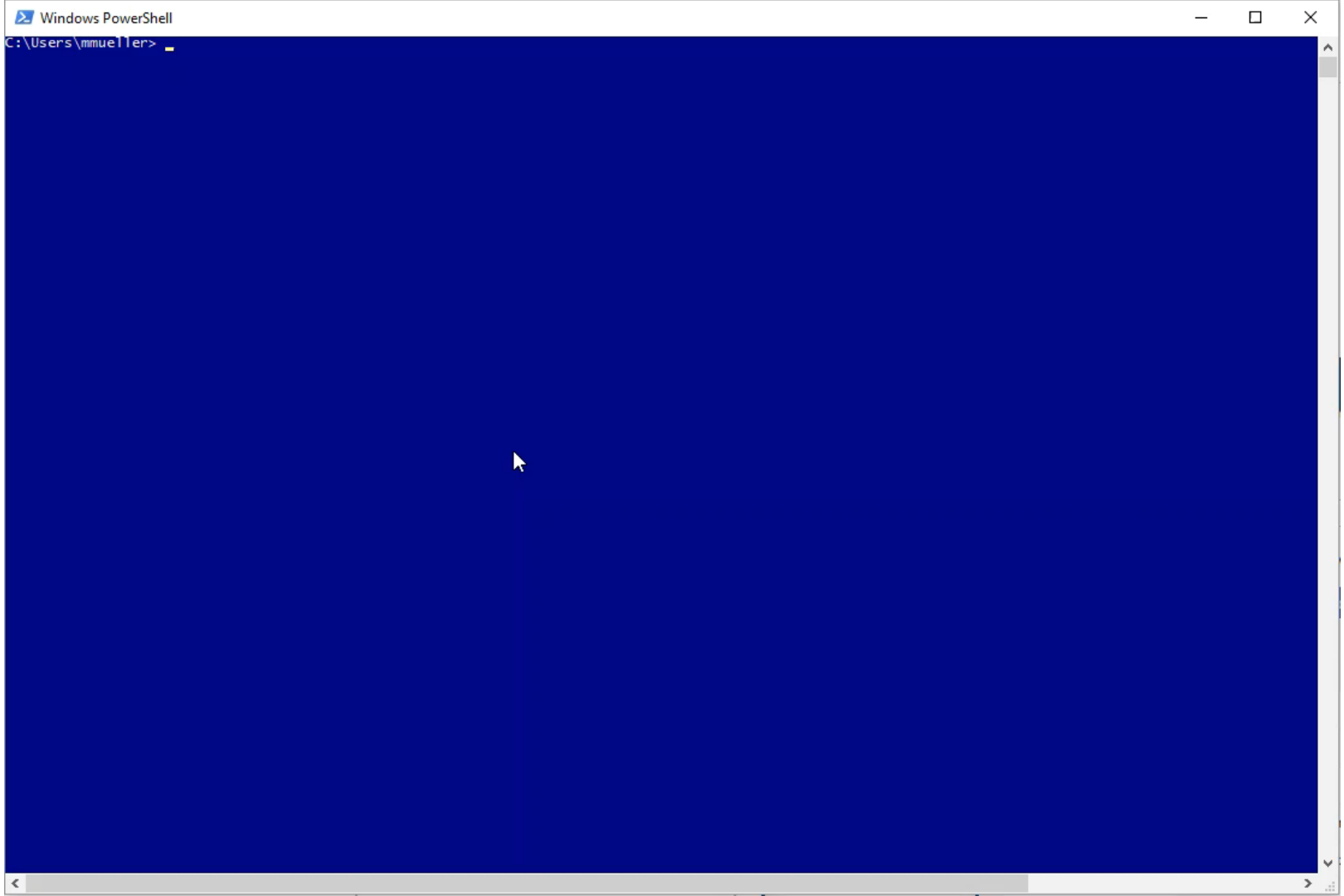

Windows PowerShell
C:\Users\mmueller>


Microsoft Azure
Resource groups > KubernetesDemo
mmueller@4tecture.ch
4TECTURE AZURE
Resource groups
4tecture Azure
Add
Columns
Refresh
Subscriptions: 1 of 3 selected – Don't see a subscription? Switch directories
Filter by name...
26 items
NAME
4tDemoContainerRegistry
Default-SQL-NorthEurope
Default-SQL-WestUS
Default-Storage-CentralUS
Default-Storage-NorthEur···
Default-Storage-SouthCen···
Default-Storage-WestEuro···
Default-Storage-WestUS
Default-Web-CentralUS
Default-Web-WestEurope
Default-Web-WestUS
demotestclient
DevOpsDockerHost
KubernetesDemo
MobileDevOpsTraining
KubernetesDemo
Resource group
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
SETTINGS
Quickstart
Resource costs
Deployments
Policies
Properties
Locks
Automation script
MONITORING
Metrics
Alert rules
Diagnostics logs
Application insights
Log analytics (OMS)
Add
Columns
Delete
Refresh
Move
Essentials
Subscription name (change)
MVP VS Ultimate
Subscription ID
b6. 2e
Deployments
2 Succeeded
Filter by name...
All types
All locations
No grouping
20 items
NAME
TYPE
LOCATION
00ssvwantpz2ueqagnt0 Storage account West Europe
agent-availabilitySet-E32C5C1A Availability set West Europe
k8s-agent-E32C5C1A-0 Virtual machine West Europe
k8s-agent-E32C5C1A-1 Virtual machine West Europe
k8s-agent-E32C5C1A-2 Virtual machine West Europe
k8s-agent-E32C5C1A-nic-0 Network interface West Europe
k8s-agent-E32C5C1A-nic-1 Network interface West Europe
k8s-agent-E32C5C1A-nic-2 Network interface West Europe
k8s-master-E32C5C1A-0 Virtual machine West Europe
k8s-master-E32C5C1A-0_OsDisk_1_0079ac09··· Disk West Europe
k8s-master-E32C5C1A-0-etcddisk Disk West Europe
k8s-master-E32C5C1A-nic-0 Network interface West Europe
k8s-master-E32C5C1A-nsg Network security group West Europe


Microsoft Azure
Resource groups
KubernetesDemo
KubernetesDemo
mmueller@4tecture.ch
4TECTURE AZURE
KubernetesDemo
Container service
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
SETTINGS
Quickstart
Agents
Properties
Locks
Automation script
SUPPORT + TROUBLESHOOTING
New support request
Move
Delete
Essentials
Resource group (change)
KubernetesDemo
Location
West Europe
Subscription name (change)
MVP VS Ultimate
Subscription ID
b6 72e
Master FQDN
demo-4t-k8s.westeurope.cloudapp.azure.com
Orchestrator
Kubernetes
1 agent pool
NAME
VM SIZE
VM COUNT
OPERATING SYSTEM
agentpools
Standard_D2_v2
3
Linux

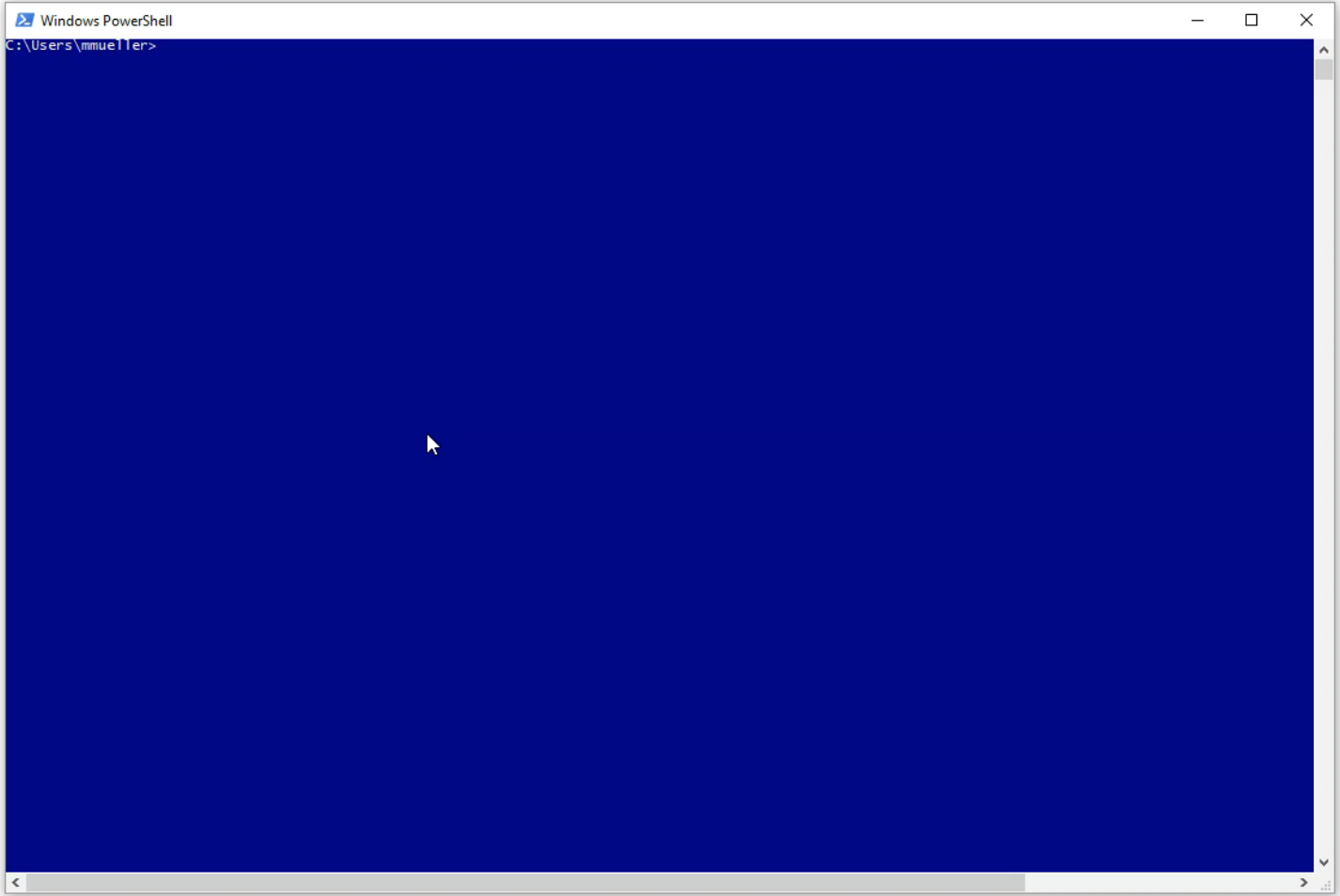
Demo Content

- Setup KubeCTL Authentication
- Use CLI to generate a local configuration file
- Use KubeCTL for all management tasks


Windows PowerShell
C:\Users\mmueller>

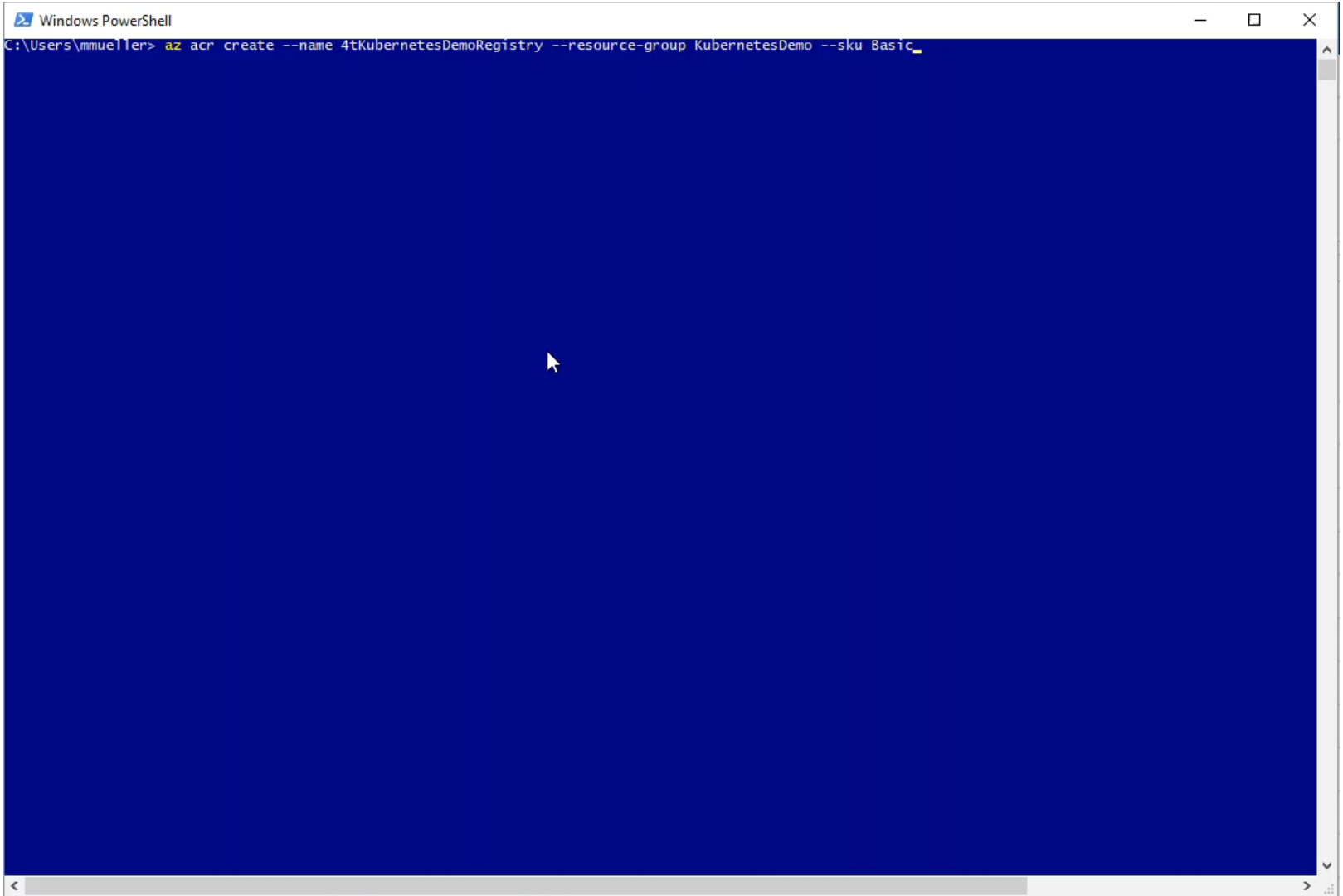
Demo Content

- Start KubeCTL Proxy
- SSH Proxy to management API
- SSH Proxy to management UI


Windows PowerShell
C:\Users\mmueller>

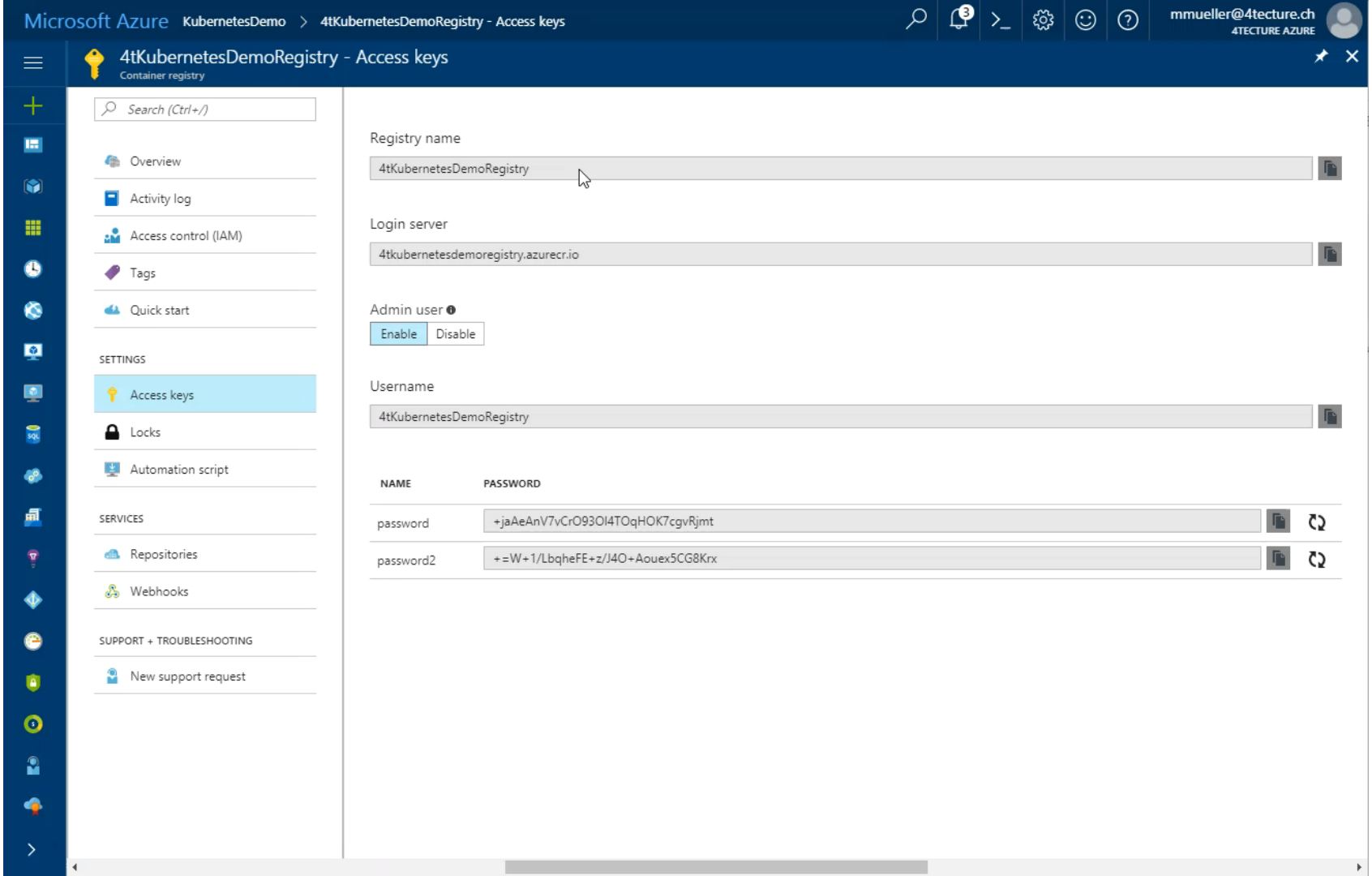
Demo Content

- Create an Azure Container Registry
- Store generated Container Images in Registry
- Use registry to deploy Pods (Containers)


Windows PowerShell
C:\Users\mmueller> az acr create --name 4tKubernetesDemoRegistry --resource-group KubernetesDemo --sku Basic

Demo Content

- Setup Credentials for Azure Container Registry
- Registry is private and needs authentication
- Kubernetes Secrets can be used to access the registry.

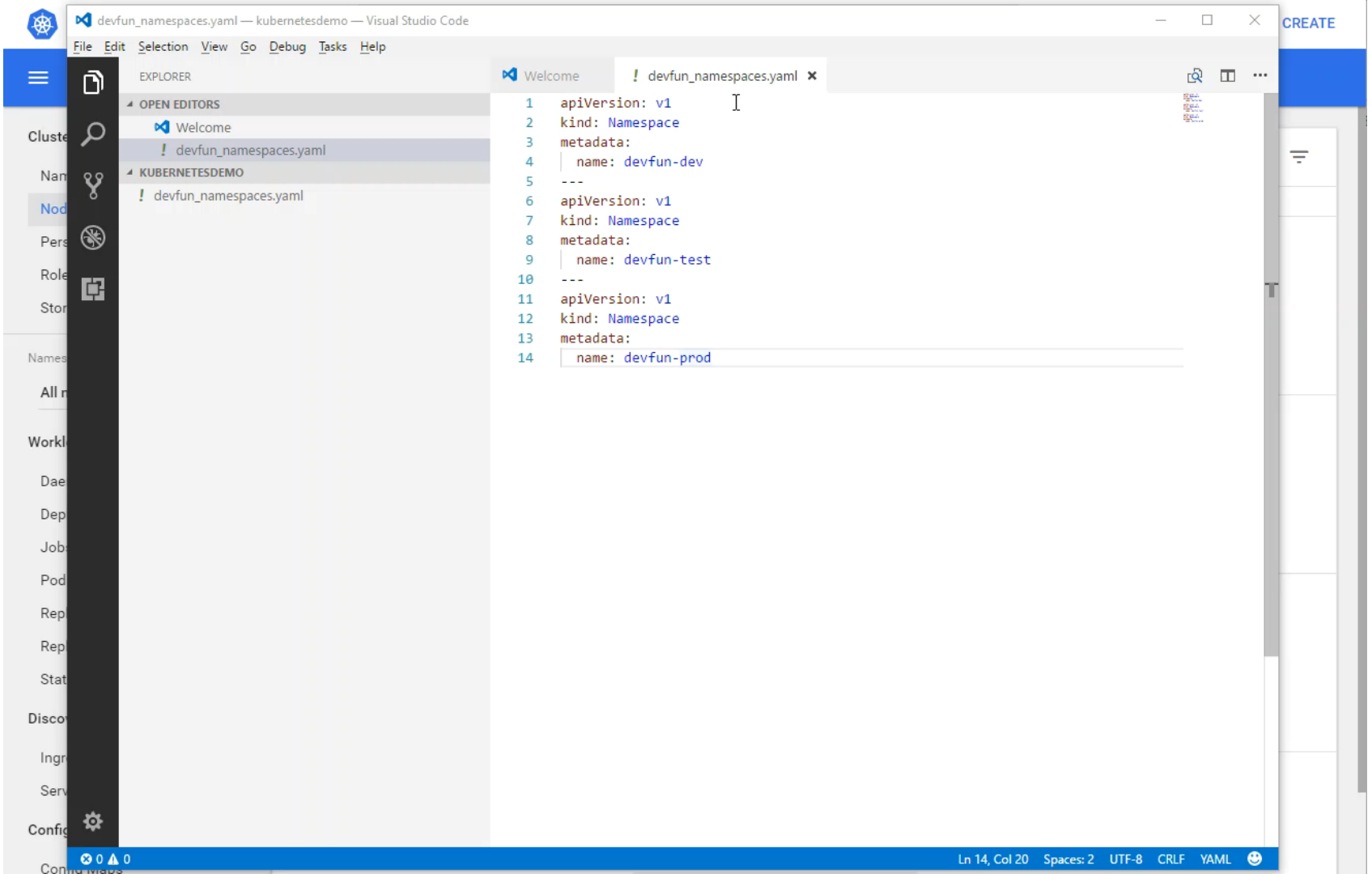

Microsoft Azure
KubernetesDemo
4tKubernetesDemoRegistry - Access keys
mmueller@4tecture.ch
4TECTURE AZURE
4tKubernetesDemoRegistry - Access keys
Container registry
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
Quick start
SETTINGS
Access keys
Locks
Automation script
SERVICES
Repositories
Webhooks
SUPPORT + TROUBLESHOOTING
New support request
Registry name
4tKubernetesDemoRegistry
Login server
4tkubernetesdemoregistry.azurecr.io
Admin user
Enable
Disable
Username
4tKubernetesDemoRegistry
NAME
PASSWORD
password
+jaAeAnV7vCrO93OI4TOqHOK7cgvRjmt
password2
+=W+1/LbqheFE+z/J4O+Aouex5CG8Krx

Demo Content

- Setup Namespaces in Kubernetes
- Instead of different clusters, we will use namespaces to distinguished between the different stages (dev, test, prod)
- Each stage corresponds to a namespace

Namespaces.yaml

```yaml
apiVersion: v1
kind: Namespace
metadata:
  name: devfun-dev
---
apiVersion: v1
kind: Namespace
metadata:
  name: devfun-test
---
apiVersion: v1
kind: Namespace
metadata:
  name: devfun-prod
```


devfun_namespaces.yaml — kubernetesdemo — Visual Studio Code
File Edit Selection View Go Debug Tasks Help
EXPLORER
OPEN EDITORS
Welcome
devfun_namespaces.yaml
KUBERNETESDEMO
devfun_namespaces.yaml
Welcome
devfun_namespaces.yaml
1 apiVersion: v1
2 kind: Namespace
3 metadata:
4 name: devfun-dev
5 ---
6 apiVersion: v1
7 kind: Namespace
8 metadata:
9 name: devfun-test
10 ---
11 apiVersion: v1
12 kind: Namespace
13 metadata:
14 name: devfun-prod
0 0
Ln 14, Col 20 Spaces: 2 UTF-8 CRLF YAML
CREATE

Demo Content

Setup Ingress Load Balancer

- Load balancer for Services
- Default Backend (Web-Server)

nginx-ingress-defaultbackend.yaml

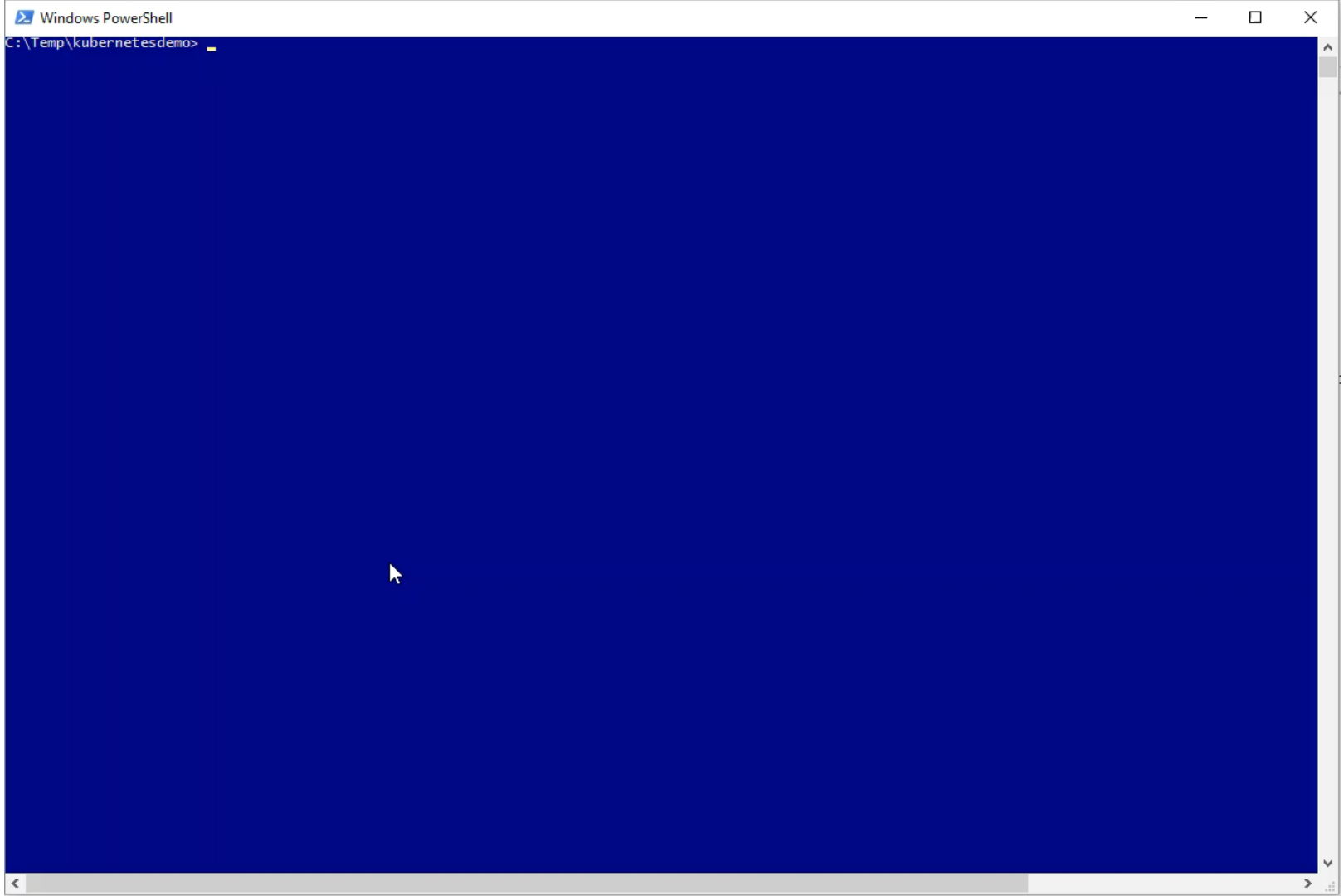
```yaml
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: default-http-backend
  labels:
    k8s-app: default-http-backend
  namespace: kube-system
spec:
  replicas: 1
  template:
    metadata:
      labels:
        k8s-app: default-http-backend
    spec:
      terminationGracePeriodSeconds: 60
      containers:
      - name: default-http-backend
        # Any image is permissable as long as:
        # 1. It serves a 404 page at /
        # 2. It serves 200 on a /healthz endpoint
        image: gcr.io/google_containers/defaultbackend:1.0
        livenessProbe:
          httpGet:
            path: /healthz
            port: 8080
            scheme: HTTP
          initialDelaySeconds: 30
          timeoutSeconds: 5
        ports:
        - containerPort: 8080
        resources:
          limits:
            cpu: 10m
            memory: 20Mi
          requests:
            cpu: 10m
            memory: 20Mi
---
apiVersion: v1
kind: Service
metadata:
  name: default-http-backend
  namespace: kube-system
  labels:
    k8s-app: default-http-backend
spec:
  ports:
  - port: 80
    targetPort: 8080
  selector:
    k8s-app: default-http-backend
```

nginx-ingress-controller.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: nginx-ingress-controller
  labels:
    k8s-app: nginx-ingress-controller
  namespace: kube-system
spec:
  replicas: 1
  template:
    metadata:
      labels:
        k8s-app: nginx-ingress-controller
      annotations:
        prometheus.io/port: '10254'
        prometheus.io/scrape: 'true'
    spec:
      # hostNetwork makes it possible to use ipv6 and to preserve the source IP correctly regardless of docker configuration
      # however, it is not a hard dependency of the nginx-ingress-controller itself and it may cause issues if port 10254 already is taken on the host
      # that said, since hostPort is broken on CNI (https://github.com/kubernetes/kubernetes/issues/31307) we have to use hostNetwork where CNI is used
      # like with kubeadm
      # hostNetwork: true
      terminationGracePeriodSeconds: 60
      containers:
      - image: gcr.io/google_containers/nginx-ingress-controller:0.9.0-beta.8
        name: nginx-ingress-controller
        readinessProbe:
          httpGet:
            path: /healthz
            port: 10254
            scheme: HTTP
        livenessProbe:
          httpGet:
            path: /healthz
            port: 10254
            scheme: HTTP
          initialDelaySeconds: 10
          timeoutSeconds: 1
        ports:
        - containerPort: 80
          hostPort: 80
        - containerPort: 443
          hostPort: 443
        env:
          - name: POD_NAME
            valueFrom:
              fieldRef:
                fieldPath: metadata.name
          - name: POD_NAMESPACE
            valueFrom:
              fieldRef:
                fieldPath: metadata.namespace
        args:
        - /nginx-ingress-controller
        - --default-backend-service=$(POD_NAMESPACE)/default-http-backend
```

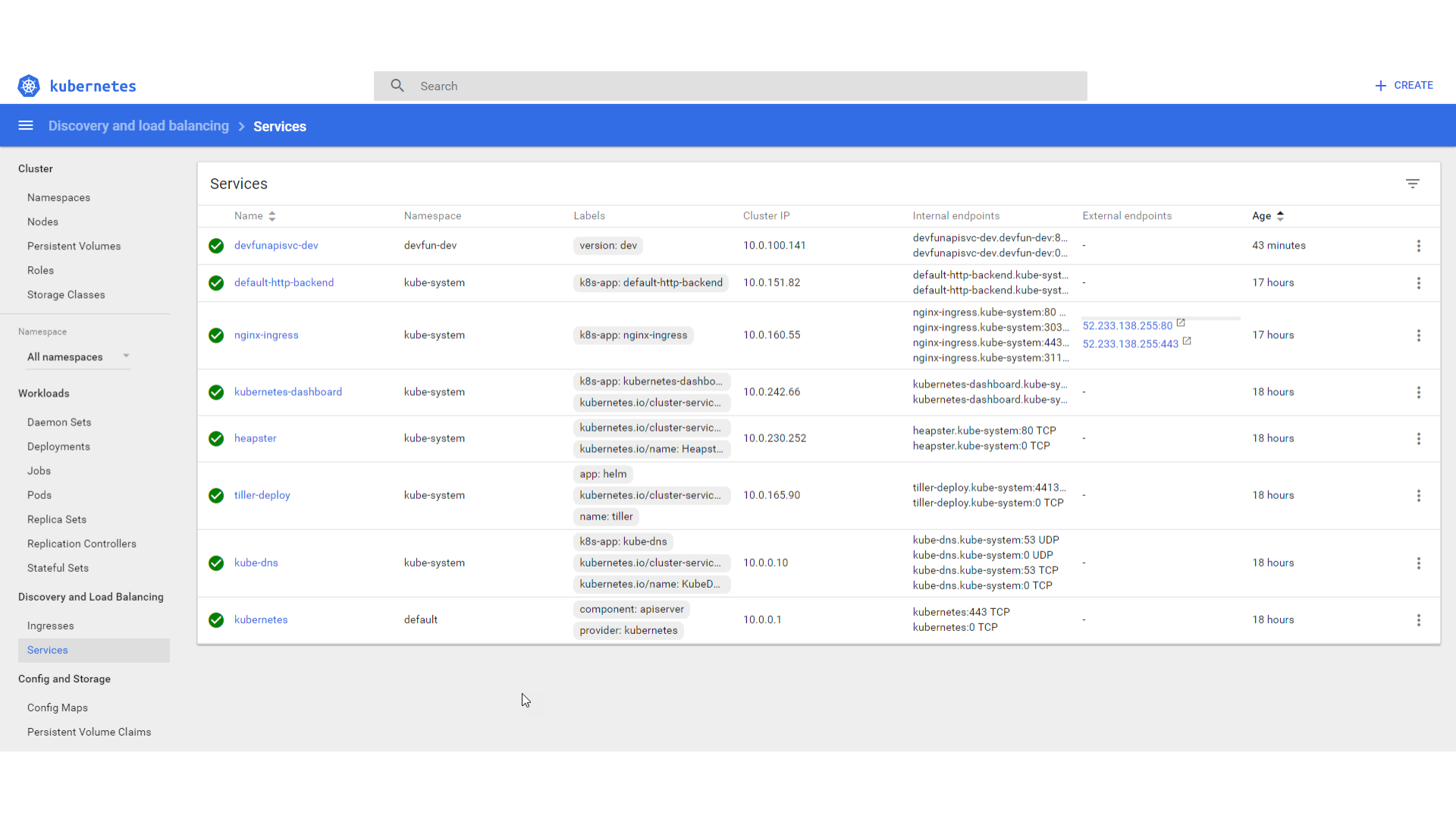
nginx-ingress-service.yaml

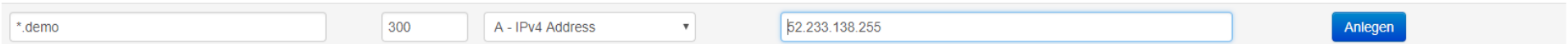
```yaml
apiVersion: v1
kind: Service
metadata:
  name: nginx-ingress
  namespace: kube-system
  labels:
    k8s-app: nginx-ingress
spec:
  type: LoadBalancer
  ports:
  - port: 80
    targetPort: 80
    name: http
  - port: 443
    targetPort: 443
    name: https
  selector:
    k8s-app: nginx-ingress-controller
```


Windows PowerShell
C:\Temp\kubernetesdemo>

Demo Content

- Setup DNS records
- Azure Load Balancer
- Ingress Service


kubernetes
Search
CREATE
Discovery and load balancing > Services
Cluster
Namespaces
Nodes
Persistent Volumes
Roles
Storage Classes
Namespace
All namespaces
Workloads
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Discovery and Load Balancing
Ingresses
Services
Config and Storage
Config Maps
Persistent Volume Claims
Services
Name
Namespace
Labels
Cluster IP
Internal endpoints
External endpoints
Age
devfunapisvc-dev
devfun-dev
version: dev
10.0.100.141
devfunapisvc-dev.devfun-dev:8...
devfunapisvc-dev.devfun-dev:0...
-
43 minutes
default-http-backend
kube-system
k8s-app: default-http-backend
10.0.151.82
default-http-backend.kube-syst...
default-http-backend.kube-syst...
-
17 hours
nginx-ingress
kube-system
k8s-app: nginx-ingress
10.0.160.55
nginx-ingress.kube-system:80 ...
nginx-ingress.kube-system:303...
nginx-ingress.kube-system:443...
nginx-ingress.kube-system:311...
52.233.138.255:80
52.233.138.255:443
17 hours
kubernetes-dashboard
kube-system
k8s-app: kubernetes-dashbo...
kubernetes.io/cluster-servic...
10.0.242.66
kubernetes-dashboard.kube-sy...
kubernetes-dashboard.kube-sy...
-
18 hours
heapster
kube-system
kubernetes.io/cluster-servic...
kubernetes.io/name: Heapst...
10.0.230.252
heapster.kube-system:80 TCP
heapster.kube-system:0 TCP
-
18 hours
tiller-deploy
kube-system
app: helm
kubernetes.io/cluster-servic...
name: tiller
10.0.165.90
tiller-deploy.kube-system:4413...
tiller-deploy.kube-system:0 TCP
-
18 hours
kube-dns
kube-system
k8s-app: kube-dns
kubernetes.io/cluster-servic...
kubernetes.io/name: KubeD...
10.0.0.10
kube-dns.kube-system:53 UDP
kube-dns.kube-system:0 UDP
kube-dns.kube-system:53 TCP
kube-dns.kube-system:0 TCP
-
18 hours
kubernetes
default
component: apiserver
provider: kubernetes
10.0.0.1
kubernetes:443 TCP
kubernetes:0 TCP
-
18 hours


*.demo
300
A - IPv4 Address
52.233.138.255
Anlegen

Demo Content

Setup load balancer for stages

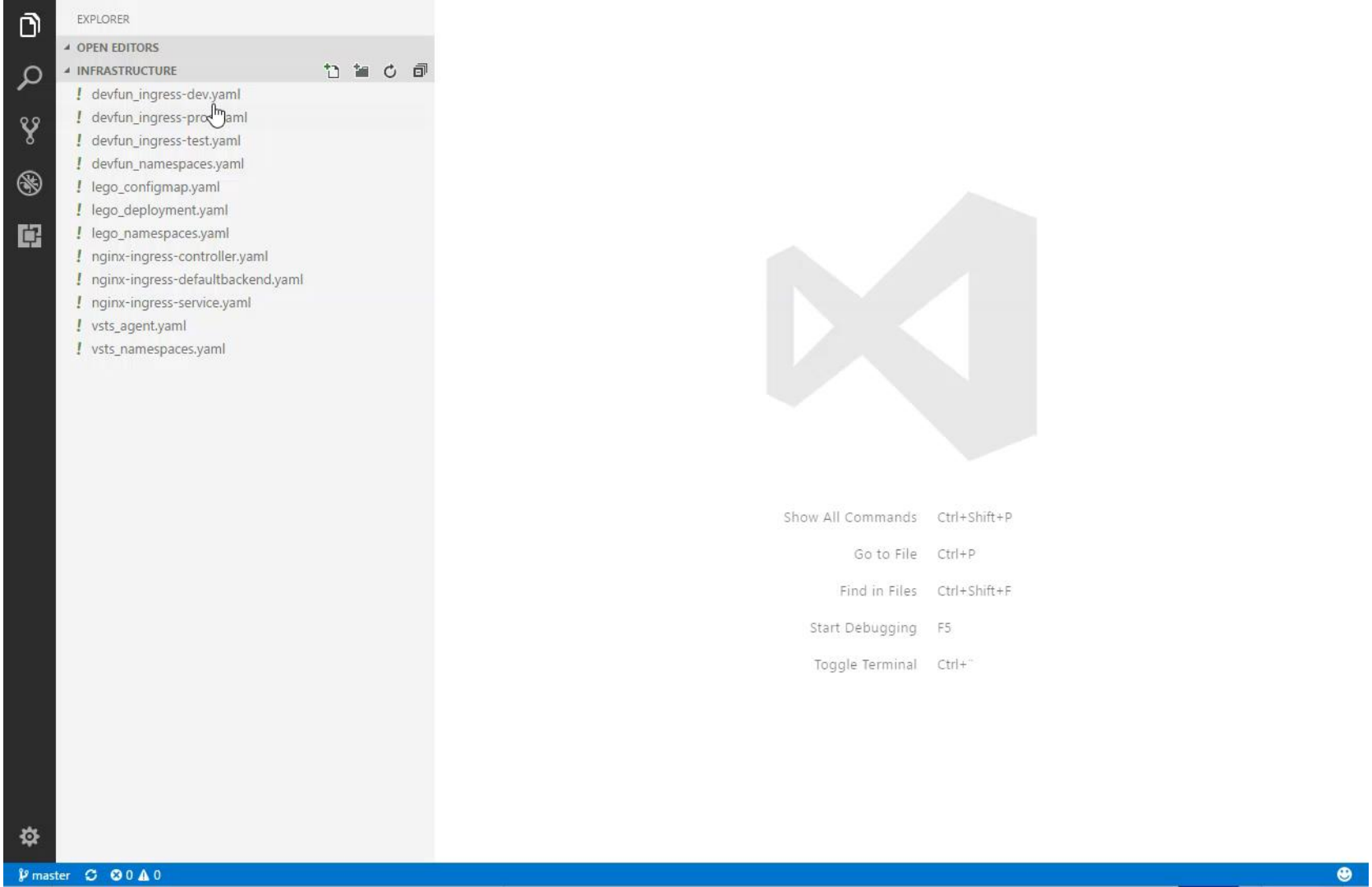
- Dev
- Test
- Prod

devfun_ingress-dev|test|prod.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-dev
  namespace: devfun-dev
  annotations:
    kubernetes.io/tls-acme: "true"
    kubernetes.io/ingress.class: "nginx"
spec:
  tls:
  - secretName: devfunapi-dev-tls
    hosts:
    - api.devfun.dev.demo.4tecture.ch
  - secretName: devfunweb-dev-tls
    hosts:
    - www.devfun.dev.demo.4tecture.ch
  rules:
  - host: api.devfun.dev.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunapisvc-dev
          servicePort: 80
  - host: www.devfun.dev.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunwebsvc-dev
          servicePort: 80
```

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-test
  namespace: devfun-test
  annotations:
    kubernetes.io/tls-acme: "true"
    kubernetes.io/ingress.class: "nginx"
spec:
  tls:
  - secretName: devfunapi-test-tls
    hosts:
    - api.devfun.test.demo.4tecture.ch
  - secretName: devfunweb-test-tls
    hosts:
    - www.devfun.test.demo.4tecture.ch
  rules:
  - host: api.devfun.test.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunapisvc-test
          servicePort: 80
  - host: www.devfun.test.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunwebsvc-test
          servicePort: 80
```

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-prod
  namespace: devfun-prod
  annotations:
    kubernetes.io/tls-acme: "true"
    kubernetes.io/ingress.class: "nginx"
spec:
  tls:
  - secretName: devfunapi-prod-tls
    hosts:
    - api.devfun.prod.demo.4tecture.ch
  - secretName: devfunweb-prod-tls
    hosts:
    - www.devfun.prod.demo.4tecture.ch
  rules:
  - host: api.devfun.prod.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunapisvc-prod
          servicePort: 80
  - host: www.devfun.prod.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunwebsvc-prod
          servicePort: 80
```

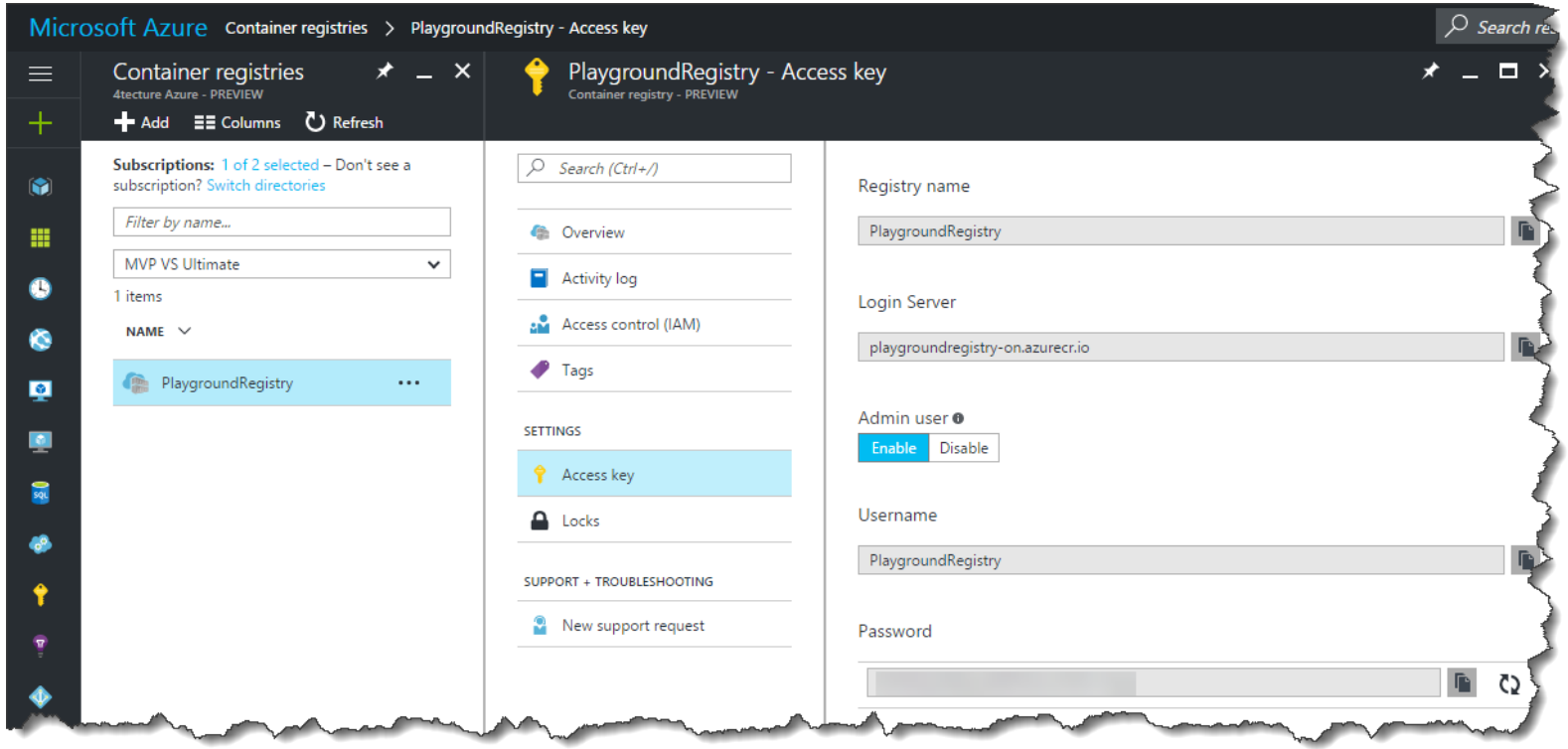

EXPLORER
OPEN EDITORS
INFRASTRUCTURE
devfun_ingress-dev.yaml
devfun_ingress-prod.yaml
devfun_ingress-test.yaml
devfun_namespaces.yaml
lego_configmap.yaml
lego_deployment.yaml
lego_namespaces.yaml
nginx-ingress-controller.yaml
nginx-ingress-defaultbackend.yaml
nginx-ingress-service.yaml
vsts_agent.yaml
vsts_namespaces.yaml
Show All Commands Ctrl+Shift+P
Go to File Ctrl+P
Find in Files Ctrl+Shift+F
Start Debugging F5
Toggle Terminal Ctrl+`
master
0 0

Infrastructure

Azure Container Registry

4tecture
empower your software solutions

Docker Registry im Azure Portal



Docker Registry API

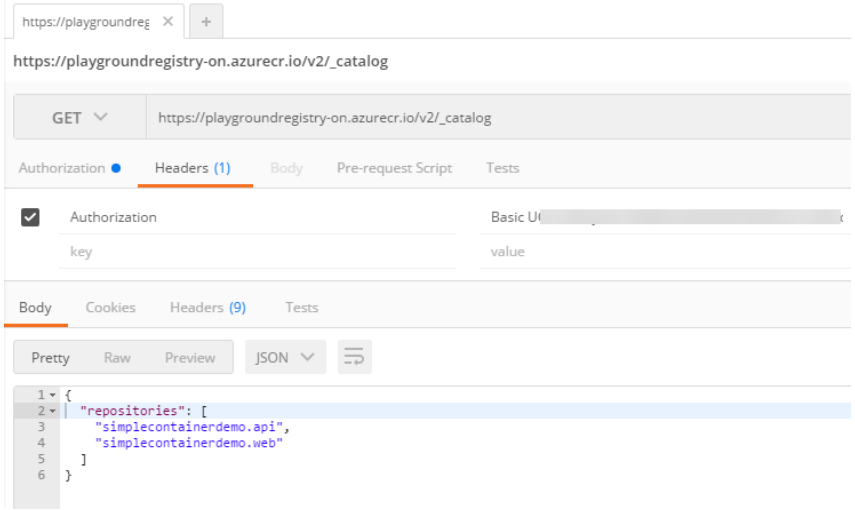
Method	Path	Entity	Description
GET	`/v2/`	Base	Check that the endpoint implements Docker Registry API V2.
GET	`/v2/<name>/tags/list`	Tags	Fetch the tags under the repository identified by `name`.
GET	`/v2/<name>/manifests/<reference>`	Manifest	Fetch the manifest identified by `name` and `reference` where `reference` can be a tag or digest. A `HEAD` request can also be issued to this endpoint to obtain resource information without receiving all data.
PUT	`/v2/<name>/manifests/<reference>`	Manifest	Put the manifest identified by `name` and `reference` where `reference` can be a tag or digest.
DELETE	`/v2/<name>/manifests/<reference>`	Manifest	Delete the manifest identified by `name` and `reference`. Note that a manifest can *only* be deleted by `digest`.
GET	`/v2/<name>/blobs/<digest>`	Blob	Retrieve the blob from the registry identified by `digest`. A `HEAD` request can also be issued to this endpoint to obtain resource information without receiving all data.
DELETE	`/v2/<name>/blobs/<digest>`	Blob	Delete the blob identified by `name` and `digest`
POST	`/v2/<name>/blobs/uploads/`	Initiate Blob Upload	Initiate a resumable blob upload. If successful, an upload location will be provided to complete the upload. Optionally, if the `digest` parameter is present, the request body will be used to complete the upload in a single request.
GET	`/v2/<name>/blobs/uploads/<uuid>`	Blob Upload	Retrieve status of upload identified by `uuid`. The primary purpose of this endpoint is to resolve the current status of a resumable upload.
PATCH	`/v2/<name>/blobs/uploads/<uuid>`	Blob Upload	Upload a chunk of data for the specified upload.
PUT	`/v2/<name>/blobs/uploads/<uuid>`	Blob Upload	Complete the upload specified by `uuid`, optionally appending the body as the final chunk.
DELETE	`/v2/<name>/blobs/uploads/<uuid>`	Blob Upload	Cancel outstanding upload processes, releasing associated resources. If this is not called, the unfinished uploads will eventually timeout.
GET	`/v2/_catalog`	Catalog	Retrieve a sorted, json list of repositories available in the registry.

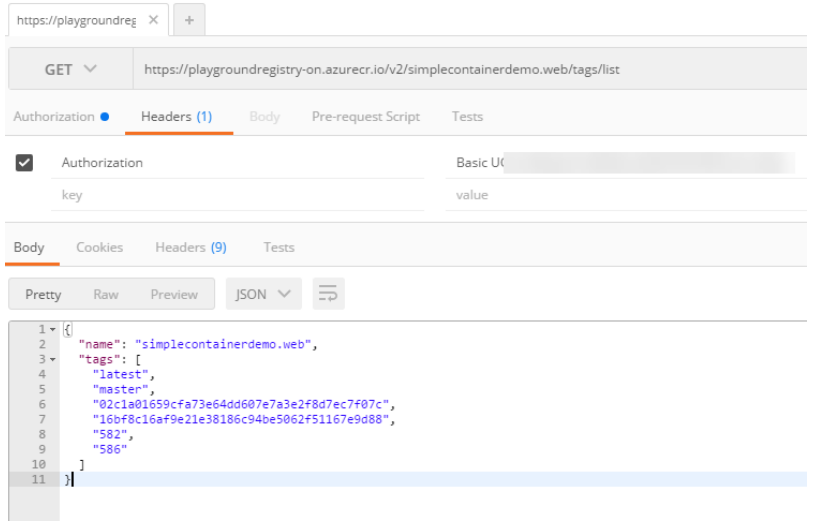
Image Source: https://docs.docker.com/registry/spec/api/

Docker Registry API - Samples

List Repositories: /v2/_catalog

List Tags: /v2/<repository>/tags/list





Container Registry

Pull Images

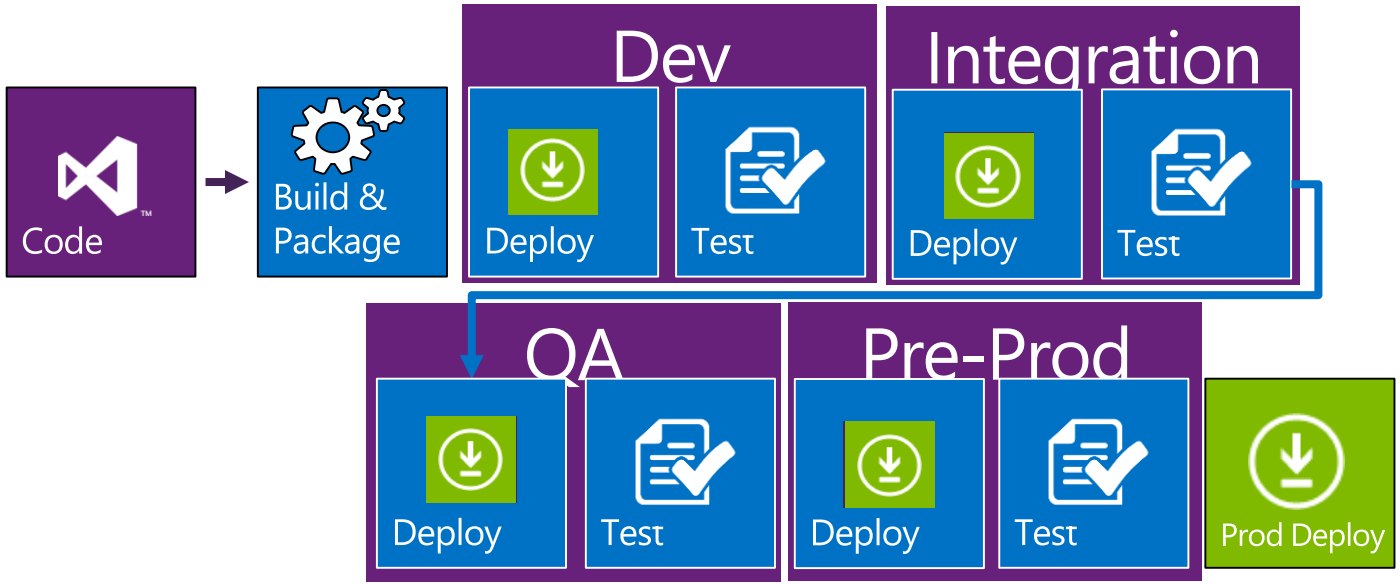
- Login to your registry — docker login <registry> -u <user> -p <pwd>
- Pull the desired image — docker pull <registry>/<repository>:<tag>
- Run the container — docker run…

Push Images

- Login to your registry — docker login <registry> -u <user> -p <pwd>
- Build the image — docker build –t <reponame>:<tag> <dockerfile>
- Push the image — docker push <reponame>:<tag>

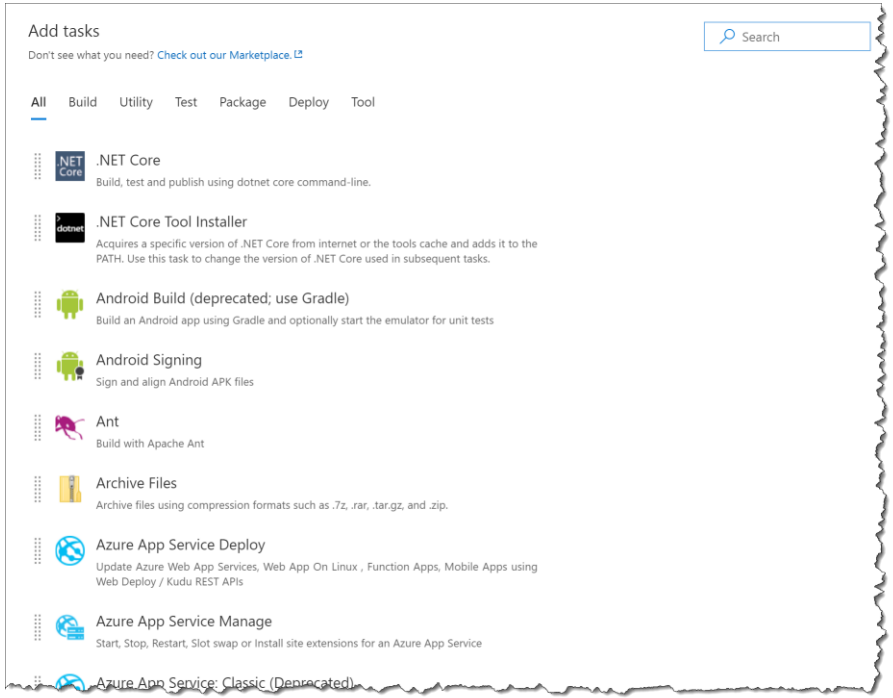
Build / Release
4tecture
empower your software solutions

Release Cycle



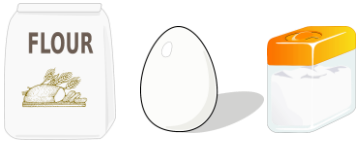
Build Steps / Build Tasks

- Large catalogue of tasks
  - Marketplace
  - Extensions
- Configurable by variables
- Can be used to build or deploy software
- Cross-Plattform (JS) Windows-Only (PowerShell)



Build vs Release Management

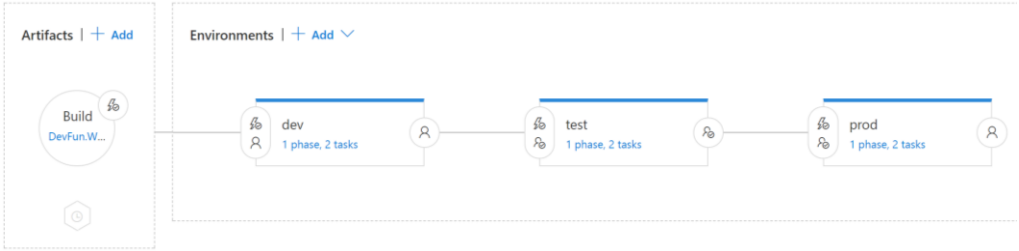
Build – Compile and Package the Application



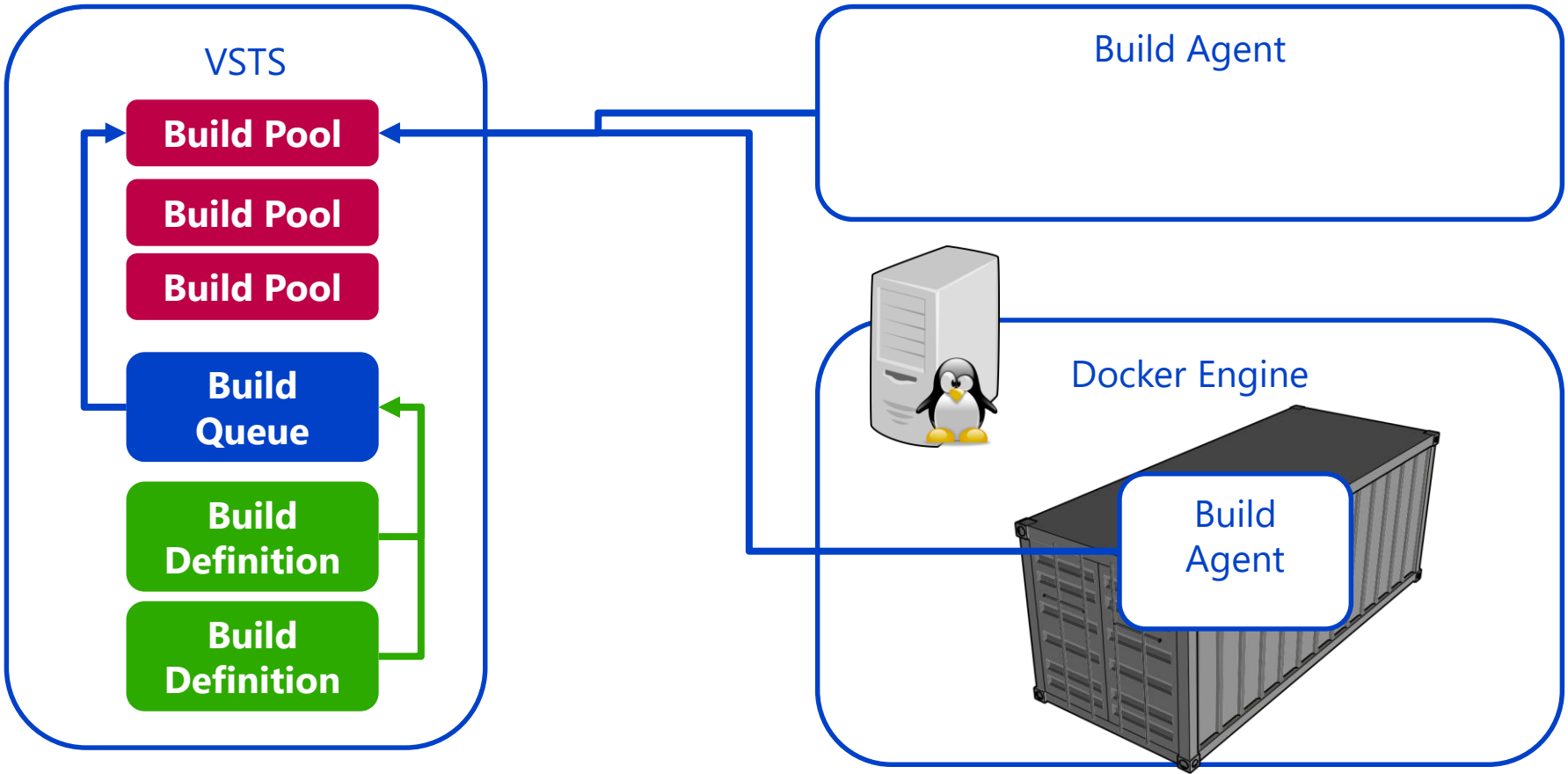
Release Management - Deploy the Application

Release Management

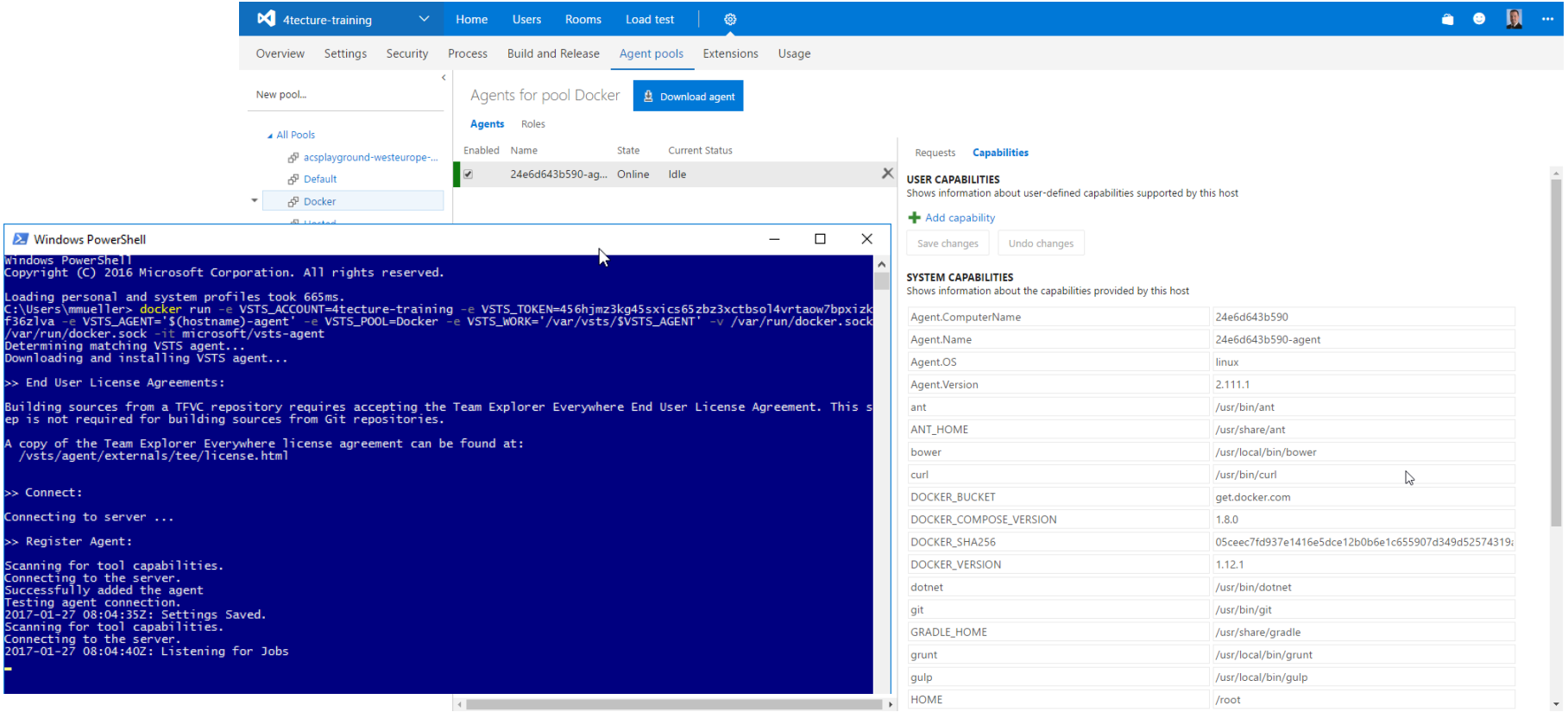
- Input Artifacts
- Define Environents (Stages)
  - Run Tasks
  - Manage Variables
  - Manage Triggers
  - Pre- and Post-Deployment Conditions
  - Traceability
- Logging / Test Results



VSTS / TFS Build Agent



Custom Docker Build Agent



Demo

Build Infrastructure

Demo Content

Setup Build Agent Containers

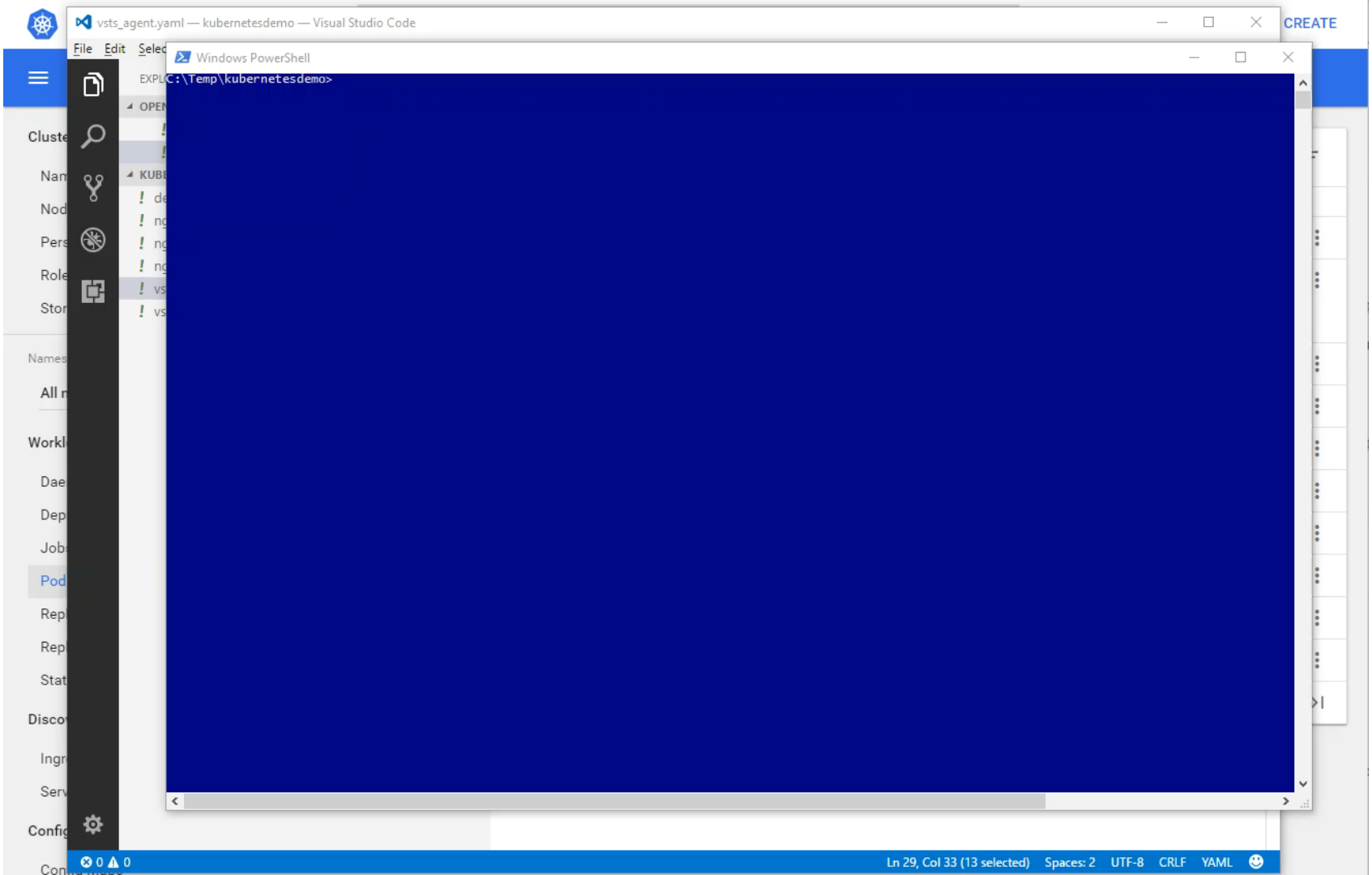
- Use dedicated namespace
- Use secrets for VSTS credentials
- Create a deployment

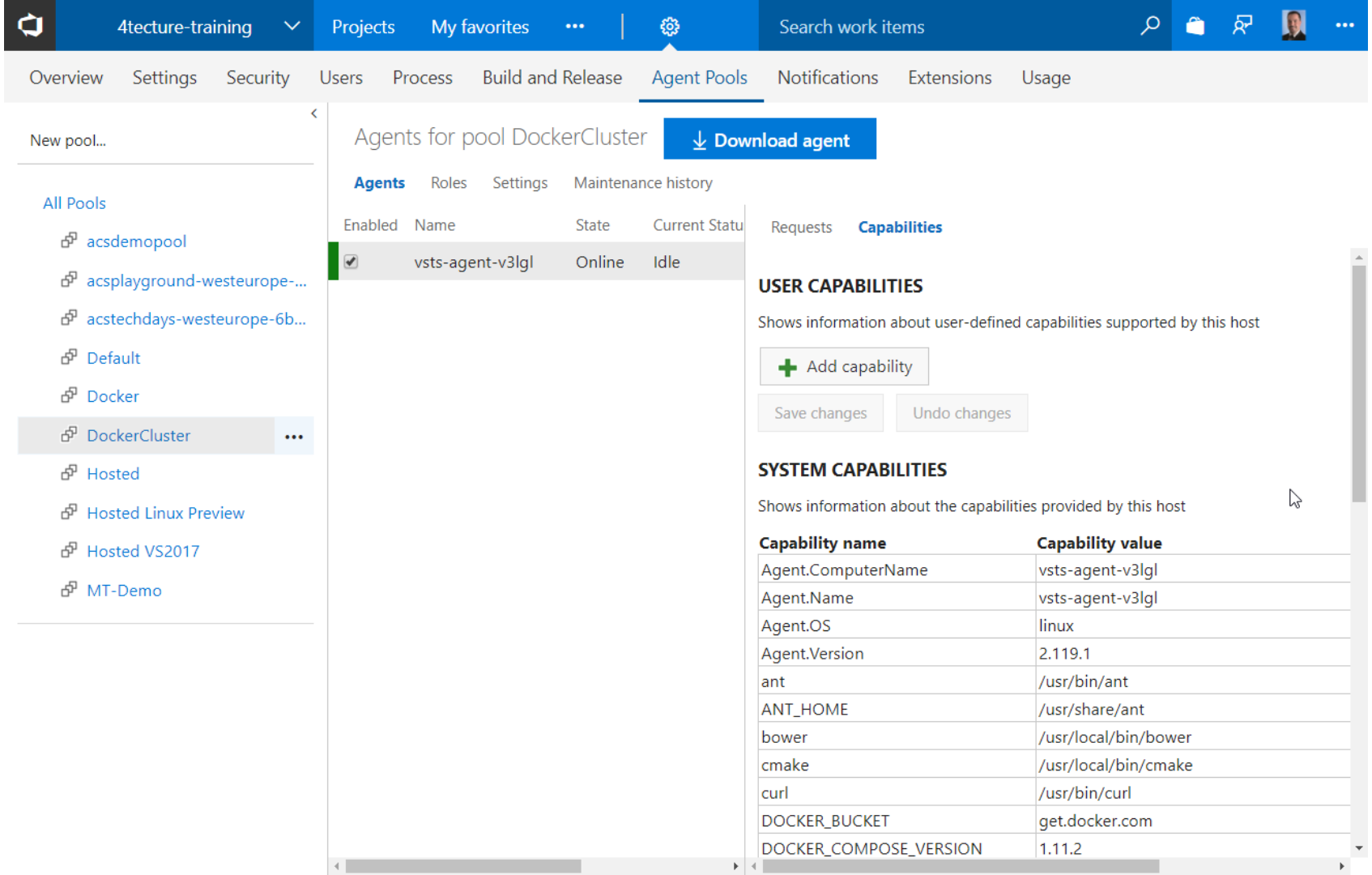
vsts_namespaces.yaml

```yaml
apiVersion: v1
kind: Namespace
metadata:
  name: vsts
```

vsts_agent.yaml

```yaml
apiVersion: v1
kind: ReplicationController
metadata:
  name: vsts-agent
  namespace: vsts
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: vsts-agent
        version: "0.1"
    spec:
      containers:
      - name: vsts-agent
        image: microsoft/vsts-agent:ubuntu-16.04-docker-17.03.0-ce-standard
        env:
          - name: VSTS_ACCOUNT
            valueFrom:
              secretKeyRef:
                name: vsts
                key: VSTS_ACCOUNT
          - name: VSTS_TOKEN
            valueFrom:
              secretKeyRef:
                name: vsts
                key: VSTS_TOKEN
          - name: VSTS_POOL
            value: DockerCluster
        volumeMounts:
        - mountPath: /var/run/docker.sock
          name: docker-volume
      volumes:
      - name: docker-volume
        hostPath:
          path: /var/run/docker.sock
```


vsts_agent.yaml — kubernetesdemo — Visual Studio Code
File Edit
Windows PowerShell
C:\Temp\kubernetesdemo>
CREATE
Ln 29, Col 33 (13 selected)
Spaces: 2
UTF-8
CRLF
YAML

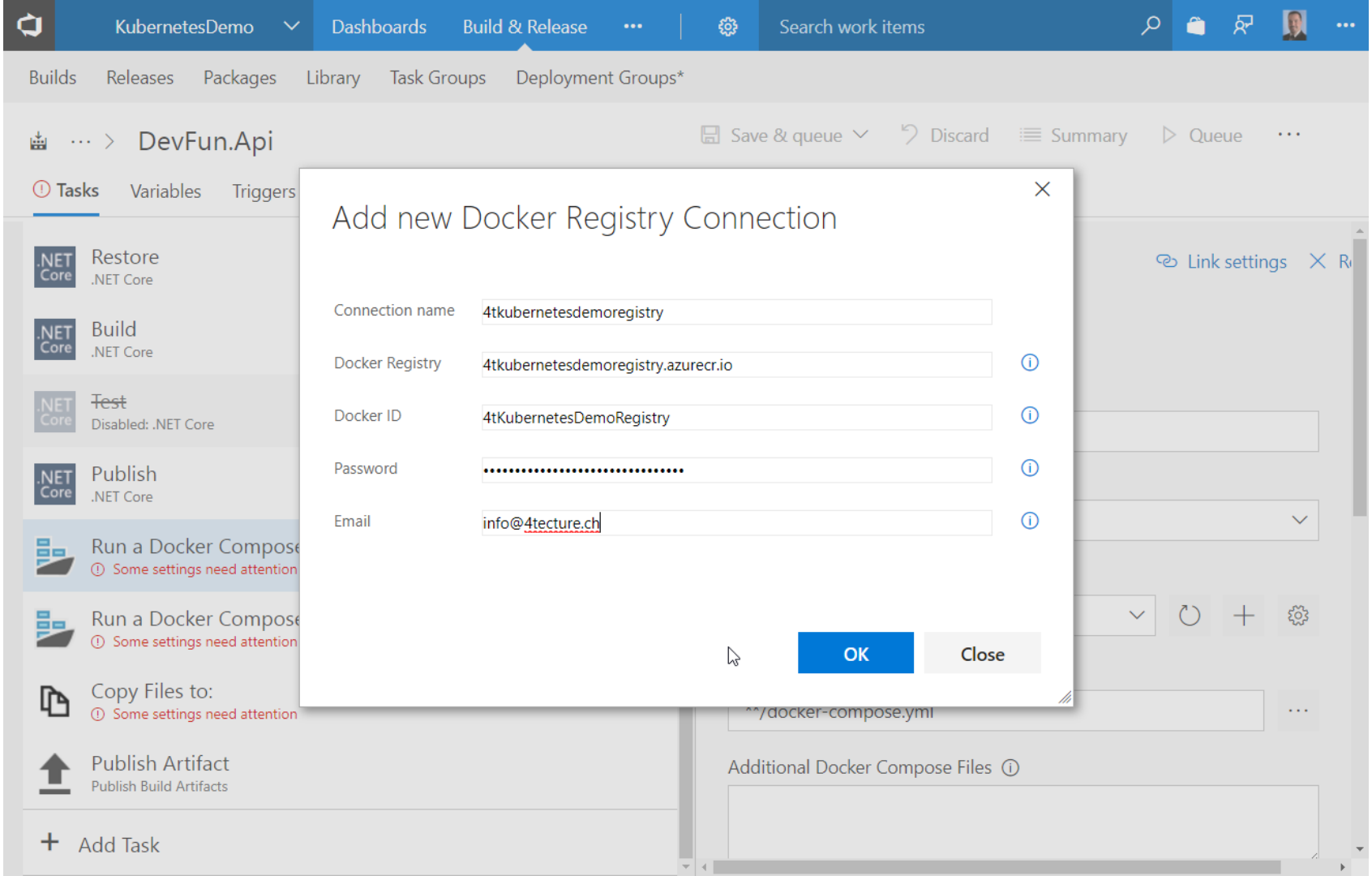

4tecture-training
Projects
My favorites
Search work items
Overview
Settings
Security
Users
Process
Build and Release
Agent Pools
Notifications
Extensions
Usage
New pool...
All Pools
acsdemopool
acsplayground-westeurope-...
acstechdays-westeurope-6b...
Default
Docker
DockerCluster
Hosted
Hosted Linux Preview
Hosted VS2017
MT-Demo
Agents for pool DockerCluster
Download agent
Agents
Roles
Settings
Maintenance history
Enabled
Name
State
Current Statu
vsts-agent-v3lgl
Online
Idle
Requests
Capabilities
USER CAPABILITIES
Shows information about user-defined capabilities supported by this host
Add capability
Save changes
Undo changes
SYSTEM CAPABILITIES
Shows information about the capabilities provided by this host
Capability name
Capability value
Agent.ComputerName
vsts-agent-v3lgl
Agent.Name
vsts-agent-v3lgl
Agent.OS
linux
Agent.Version
2.119.1
ant
/usr/bin/ant
ANT_HOME
/usr/share/ant
bower
/usr/local/bin/bower
cmake
/usr/local/bin/cmake
curl
/usr/bin/curl
DOCKER_BUCKET
get.docker.com
DOCKER_COMPOSE_VERSION
1.11.2

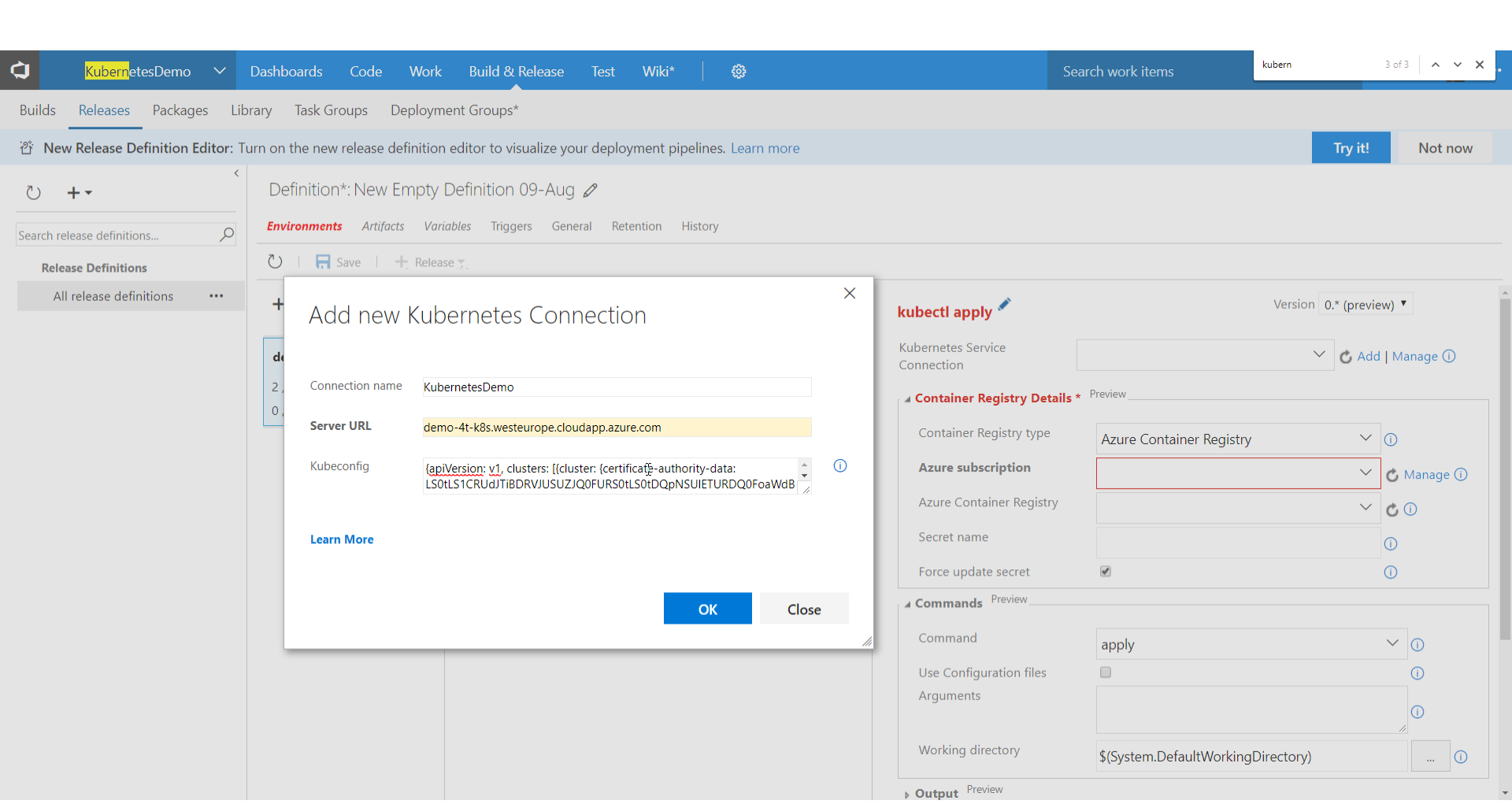
Demo

VSTS Build and Release Automation

Setup VSTS Services

- Docker Registry Connection
- Kubernetes Connection


KubernetesDemo
Dashboards
Build & Release
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Api
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Restore
.NET Core
Build
.NET Core
Test
Disabled: .NET Core
Publish
.NET Core
Run a Docker Compose
Some settings need attention
Run a Docker Compose
Some settings need attention
Copy Files to:
Some settings need attention
Publish Artifact
Publish Build Artifacts
Add Task
Link settings
**/docker-compose.yml
Additional Docker Compose Files
Add new Docker Registry Connection
Connection name
4tkubernetesdemoregistry
Docker Registry
4tkubernetesdemoregistry.azurecr.io
Docker ID
4tKubernetesDemoRegistry
Password
Email
info@4tecture.ch
OK
Close


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
kubern
3 of 3
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
New Release Definition Editor: Turn on the new release definition editor to visualize your deployment pipelines. Learn more
Try it!
Not now
Search release definitions...
Release Definitions
All release definitions
Definition*: New Empty Definition 09-Aug
Environments
Artifacts
Variables
Triggers
General
Retention
History
Save
Release
Add new Kubernetes Connection
Connection name
KubernetesDemo
Server URL
demo-4t-k8s.westeurope.cloudapp.azure.com
Kubeconfig
{apiVersion: v1, clusters: [{cluster: {certificate-authority-data:
LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tDQpNSUlETURDQ0FoaWdB
Learn More
OK
Close
kubectl apply
Version
0.* (preview)
Kubernetes Service Connection
Add | Manage
Container Registry Details * Preview
Container Registry type
Azure Container Registry
Azure subscription
Manage
Azure Container Registry
Secret name
Force update secret
Commands Preview
Command
apply
Use Configuration files
Arguments
Working directory
$(System.DefaultWorkingDirectory)
Output Preview

Demo

Build / Release Process

Demo Content

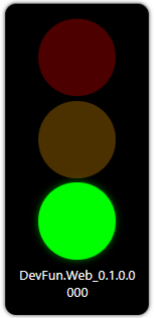
Build and Release Definition

- Build Tasks
- Release Tasks
- Environment Variables

KubernetesDemo | Dashboards | Code | Work | Build & Release | Test | Wiki* | Search work items

Overview | CI / CD | New

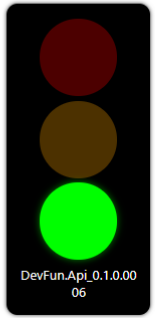
DevFun.Web



DevFun.Web

22.08.2017

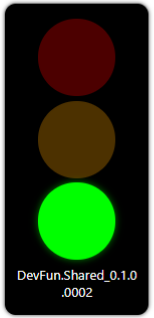
DevFun.Api



DevFun.Api

22.08.2017

DevFun.Shared



DevFun.Shared

09.08.2017

Release Definition Overview

dev	test	prod
DevFun.We...	DevFun.We...	DevFun.We...

DevFun.Web_0.1.0.0000_3
DevFun.Web_0.1.0.0000_2
DevFun.Web_0.1.0.0000_1

View all releases for DevFun.Web release definition

Release Definition Overview

dev	test	prod
DevFun.Api...	DevFun.Api...	DevFun.Api...

DevFun.Api_0.1.0.0006_3
DevFun.Api_0.1.0.0006_2
DevFun.Api_0.1.0.0006_1
DevFun.Api_0.1.0.0005_3
DevFun.Api_0.1.0.0005_2

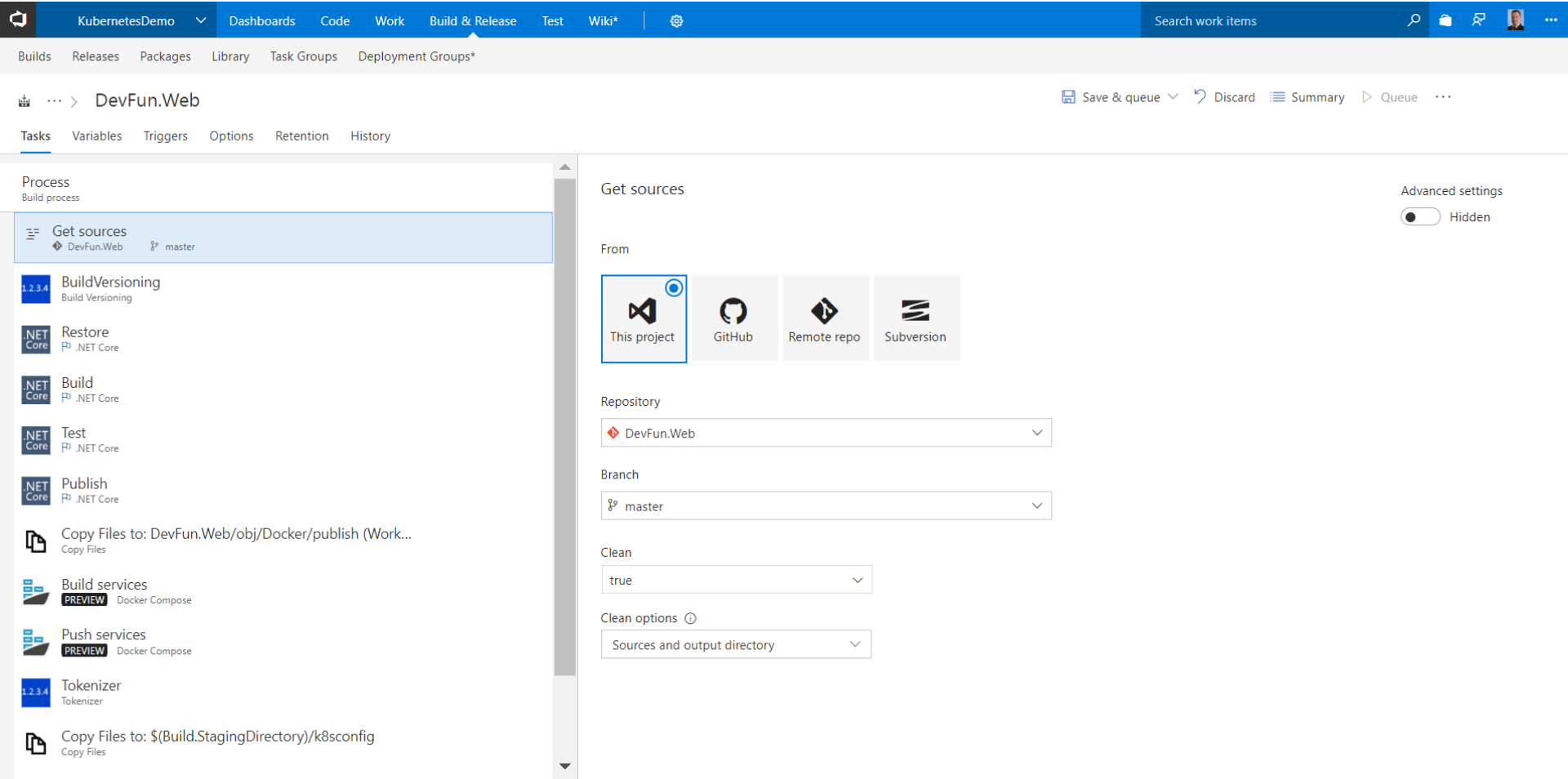
View all releases for DevFun.Api release definition

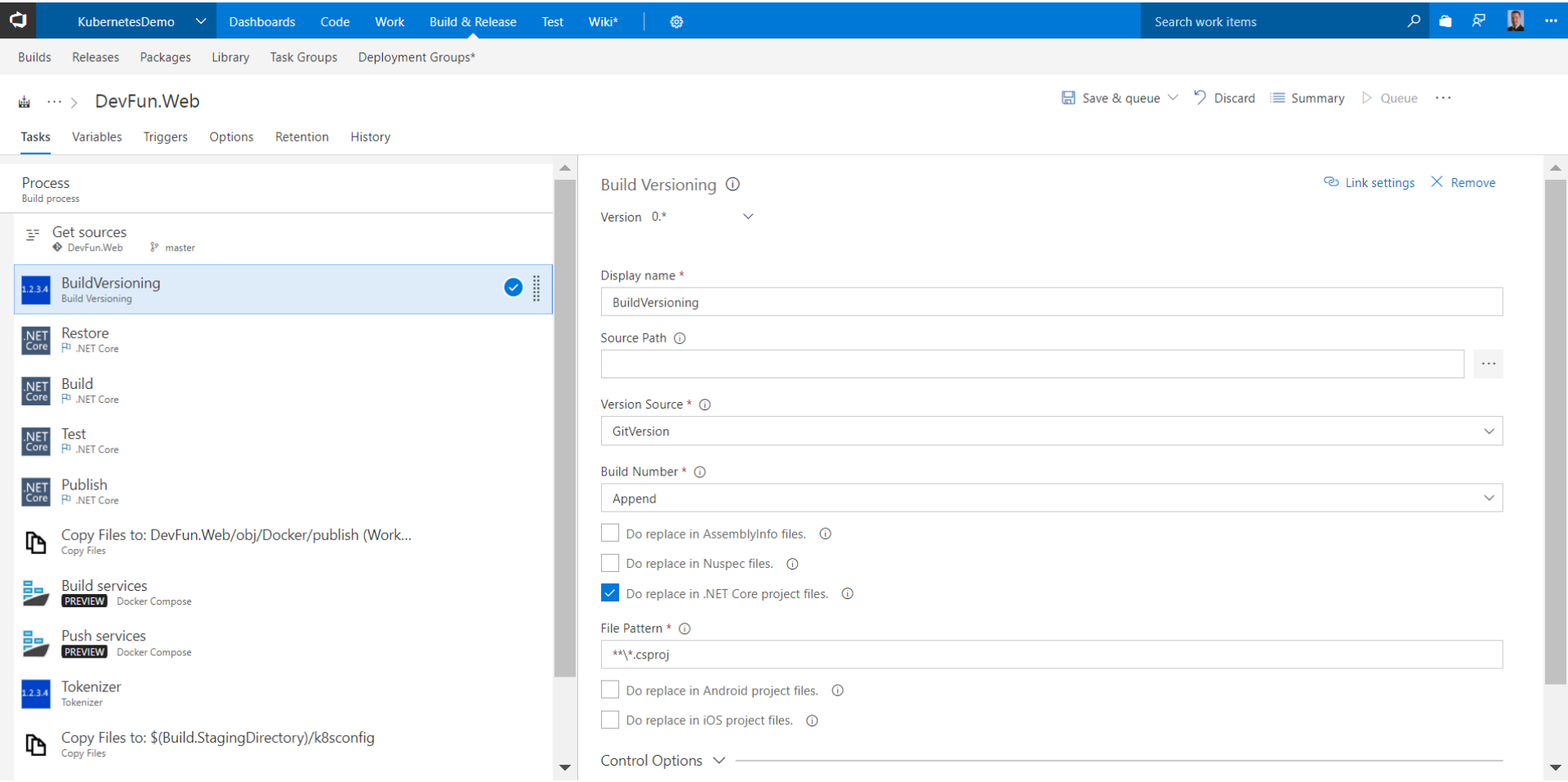
Build Definitions

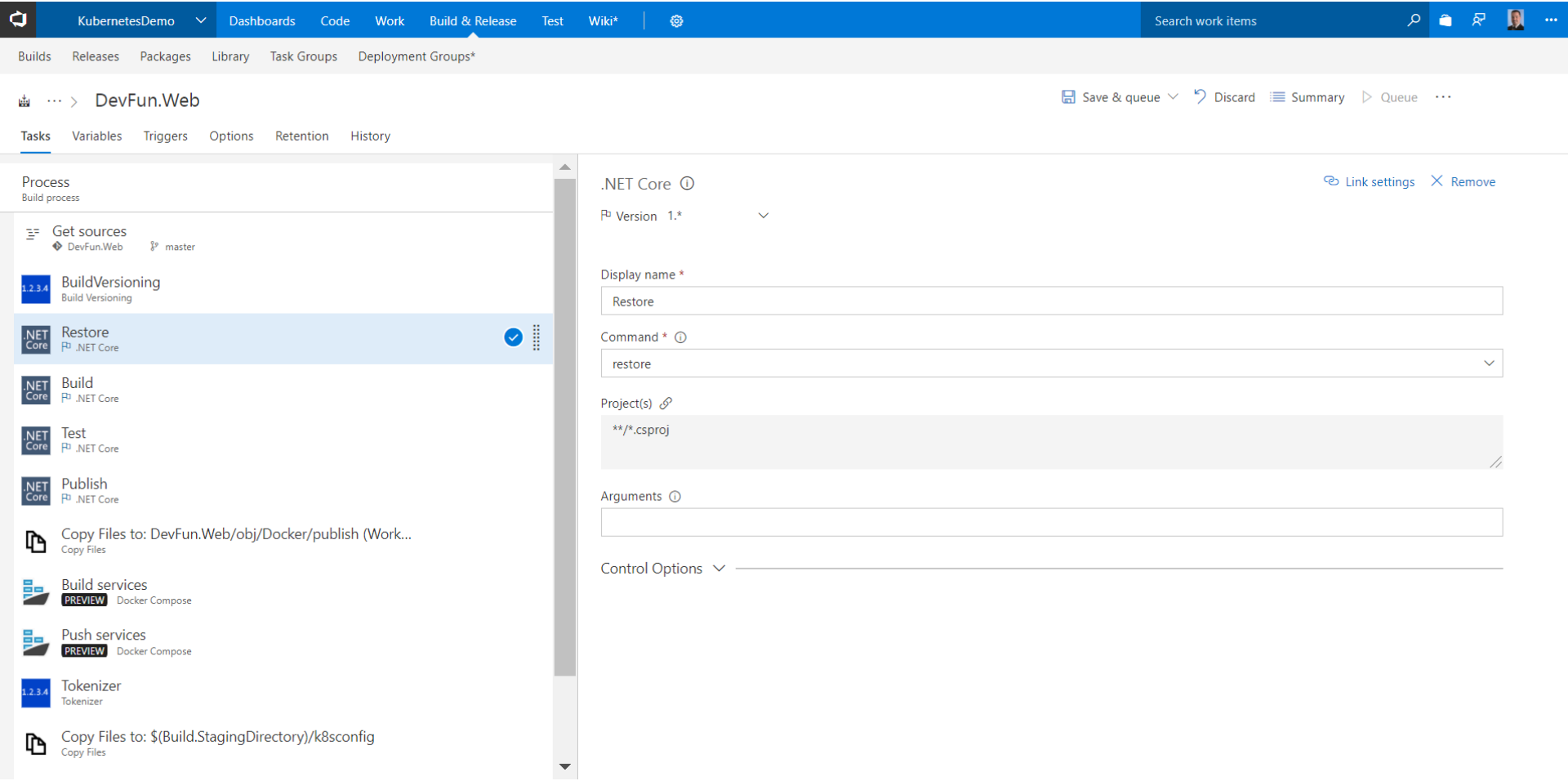
Build ID or build number | + New | + Import | Security | Help

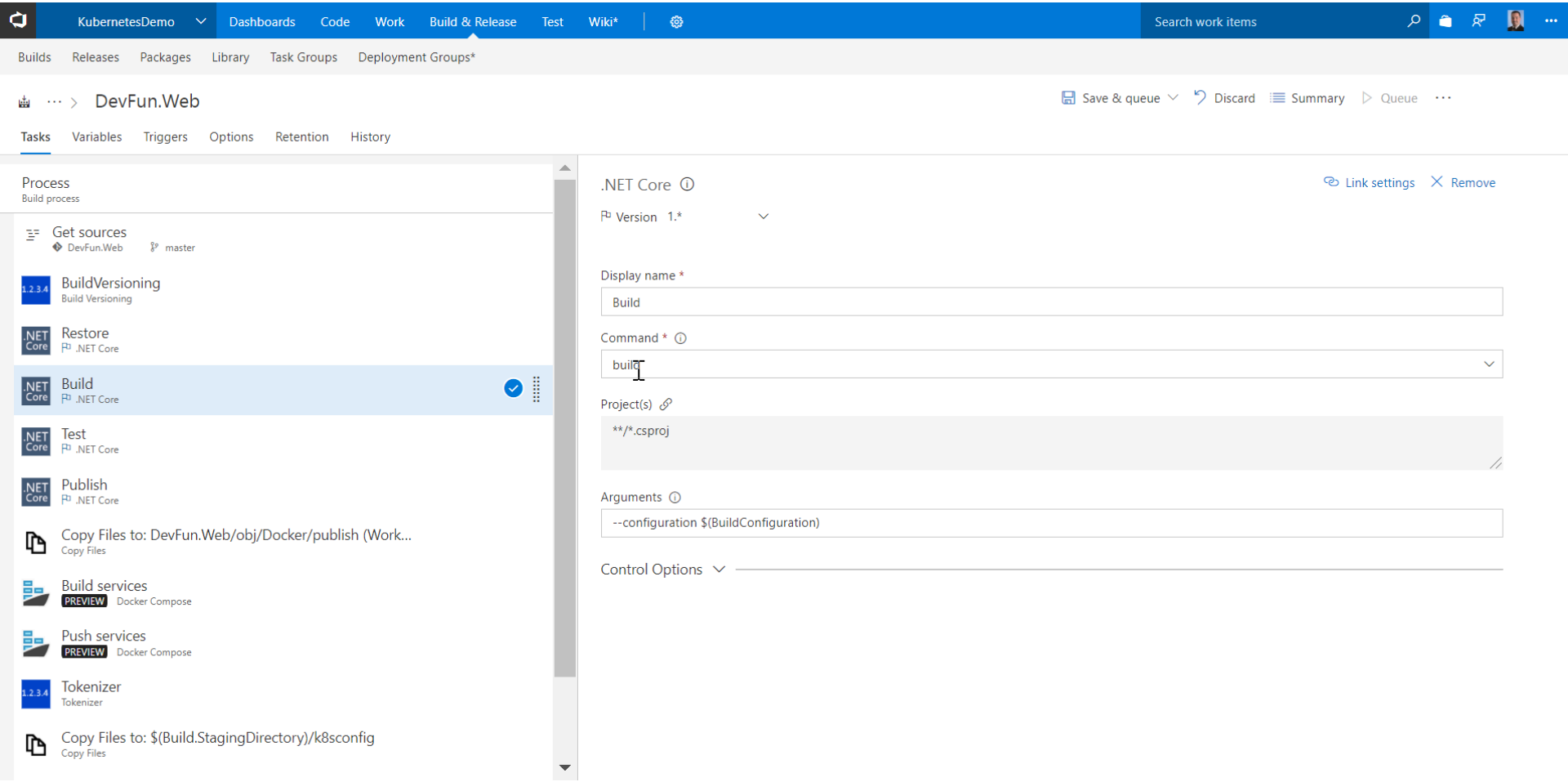
Mine | All Definitions | Queued | XAML

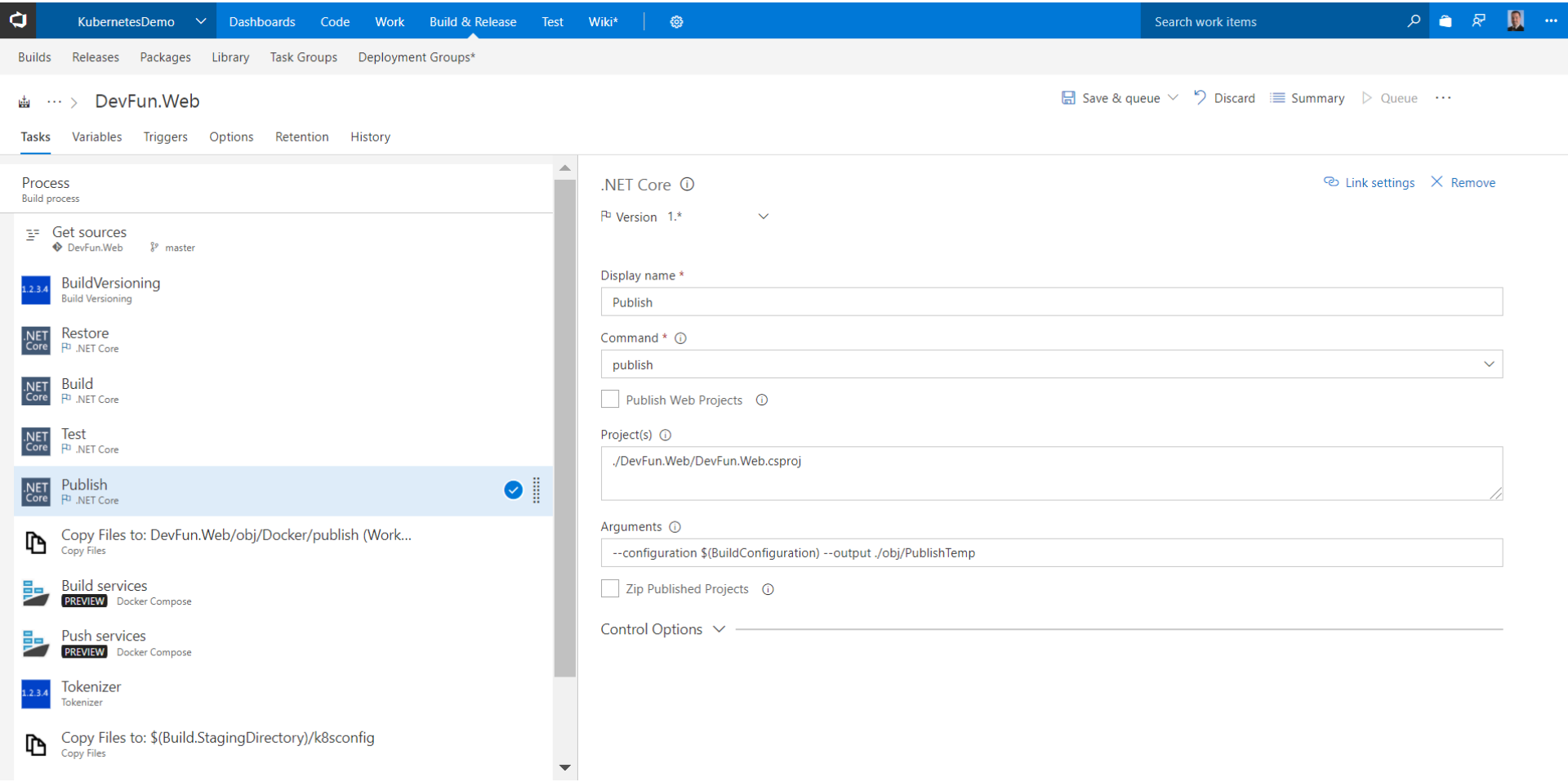
Requested by me	Status	Triggered by	7-day pass rate	History
DevFun.Api : #DevFun.Api_0.1.0.0006 **Marc Müller** requested 3 hours ago	✓ succeeded	removed placeholders bf73528 in master	100% →	
DevFun.Web : #DevFun.Web_0.1.0.0000 **Marc Müller** requested 3 hours ago	✓ succeeded	initial content 785af6b in master	100% →	
SetupAgentLinux : #847 **Marc Müller** requested 3 hours ago	✓ succeeded	Added README.md file 65139fd in master	100% →	
DevFun.Shared : #DevFun.Shared_0.1.0.0002 **Marc Müller** requested 2 weeks ago	✓ succeeded	added nuget config ec16f6f in master	0% →	

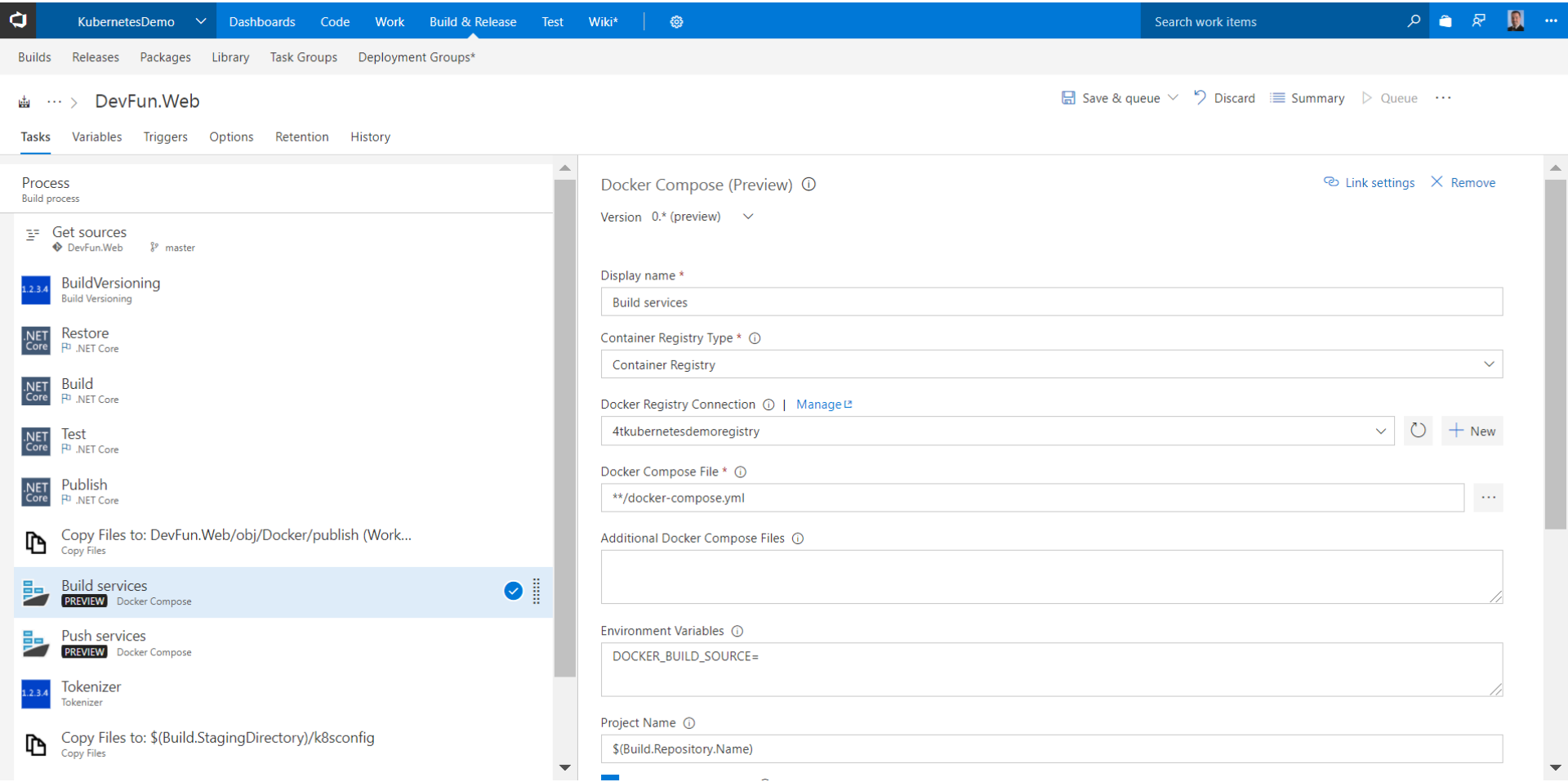

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Get sources
From
This project
GitHub
Remote repo
Subversion
Repository
DevFun.Web
Branch
master
Clean
true
Clean options
Sources and output directory
Advanced settings
Hidden

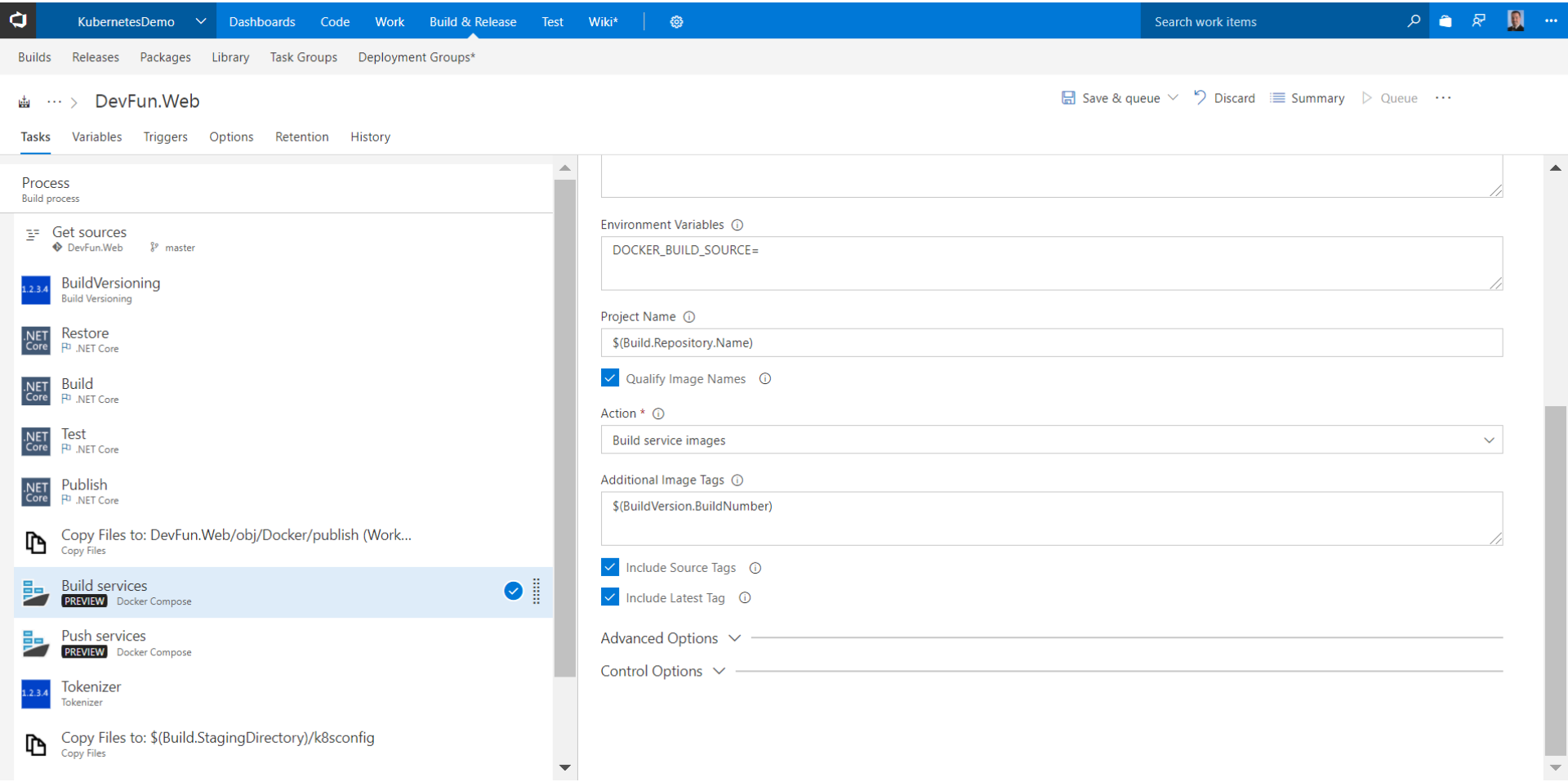

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Build Versioning
Link settings
Remove
Version 0.*
Display name *
BuildVersioning
Source Path
Version Source *
GitVersion
Build Number *
Append
Do replace in AssemblyInfo files.
Do replace in Nuspec files.
Do replace in .NET Core project files.
File Pattern *
***.csproj
Do replace in Android project files.
Do replace in iOS project files.
Control Options

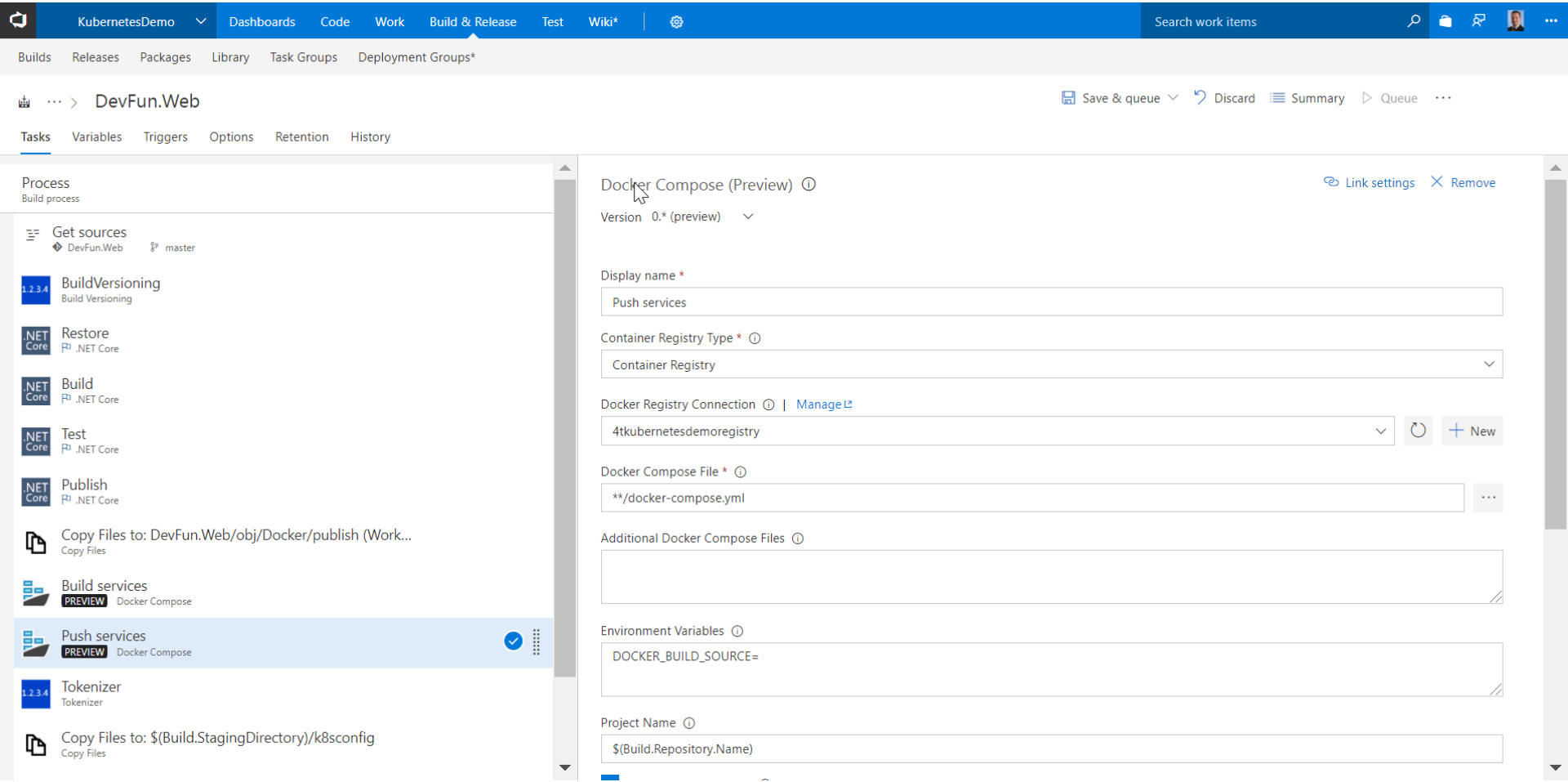

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
.NET Core
Link settings
Remove
Version 1.*
Display name *
Restore
Command *
restore
Project(s)
**/*.csproj
Arguments
Control Options

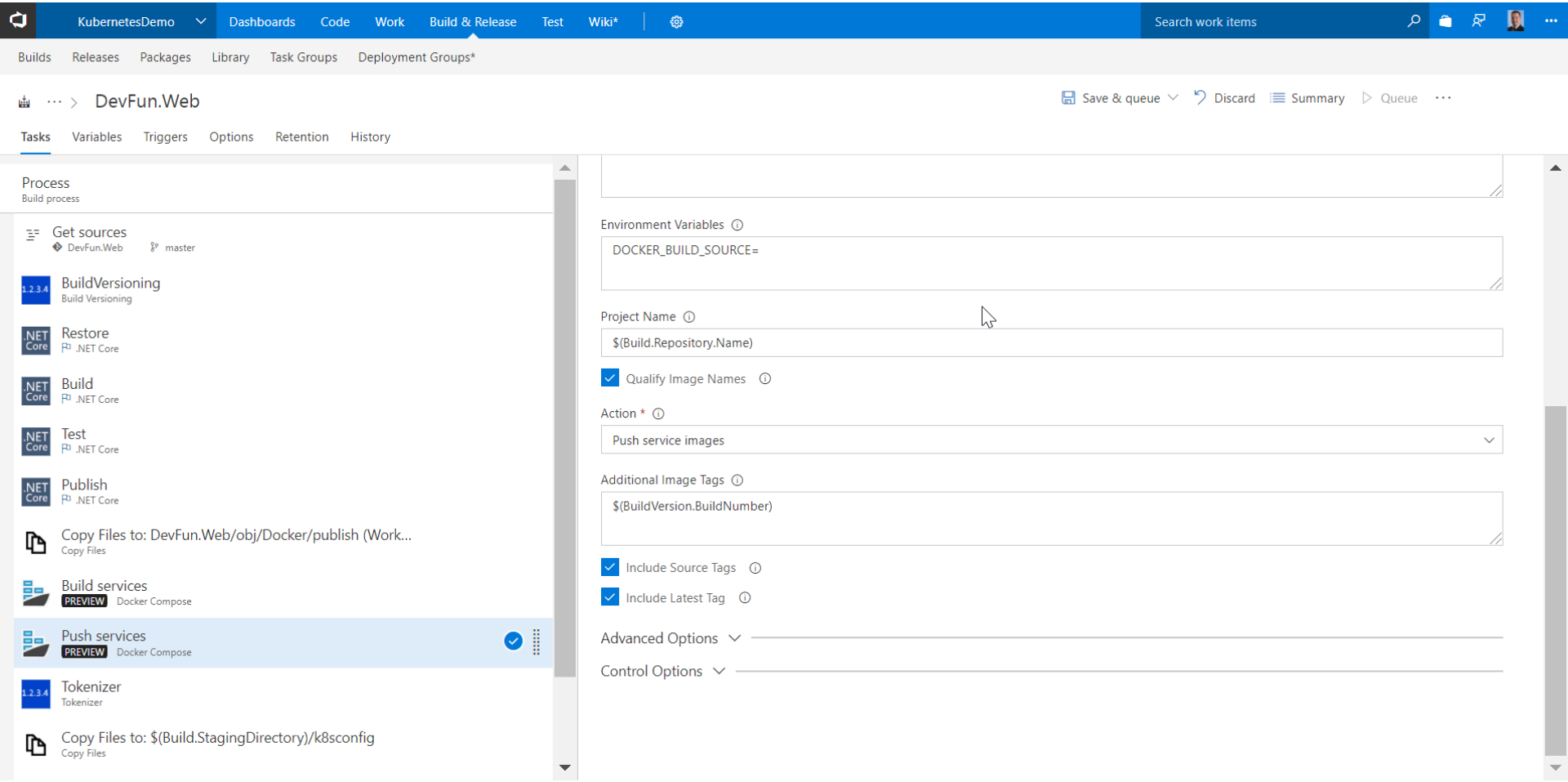

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
.NET Core
Link settings
Remove
Version 1.*
Display name *
Build
Command *
build
Project(s)
**/*.csproj
Arguments
--configuration $(BuildConfiguration)
Control Options


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
.NET Core
Link settings
Remove
Version 1.*
Display name *
Publish
Command *
publish
Publish Web Projects
Project(s)
./DevFun.Web/DevFun.Web.csproj
Arguments
--configuration $(BuildConfiguration) --output ./obj/PublishTemp
Zip Published Projects
Control Options


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Docker Compose (Preview)
Link settings
Remove
Version
0.* (preview)
Display name *
Build services
Container Registry Type *
Container Registry
Docker Registry Connection
Manage
4tkubernetesdemoregistry
New
Docker Compose File *
**/docker-compose.yml
Additional Docker Compose Files
Environment Variables
DOCKER_BUILD_SOURCE=
Project Name
$(Build.Repository.Name)


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Environment Variables
DOCKER_BUILD_SOURCE=
Project Name
$(Build.Repository.Name)
Qualify Image Names
Action *
Build service images
Additional Image Tags
$(BuildVersion.BuildNumber)
Include Source Tags
Include Latest Tag
Advanced Options
Control Options


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Docker Compose (Preview)
Link settings
Remove
Version
0.* (preview)
Display name *
Push services
Container Registry Type *
Container Registry
Docker Registry Connection
Manage
4tkubernetesdemoregistry
New
Docker Compose File *
**/docker-compose.yml
Additional Docker Compose Files
Environment Variables
DOCKER_BUILD_SOURCE=
Project Name
$(Build.Repository.Name)


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Environment Variables
DOCKER_BUILD_SOURCE=
Project Name
$(Build.Repository.Name)
Qualify Image Names
Action *
Push service images
Additional Image Tags
$(BuildVersion.BuildNumber)
Include Source Tags
Include Latest Tag
Advanced Options
Control Options

KubernetesDemo | Dashboards | Code | Work | Build & Release | Test | Wiki* | Search work items

Builds | Releases | Packages | Library | Task Groups | Deployment Groups*

DevFun.Web

Save & queue | Discard | Summary | Queue

Tasks | Variables | Triggers | Options | Retention | History

Process
Build process

Get sources
DevFun.Web master

BuildVersioning
Build Versioning

Restore
.NET Core

Build
.NET Core

Test
.NET Core

Publish
.NET Core

Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files

Build services
PREVIEW Docker Compose

Push services
PREVIEW Docker Compose

Tokenizer
Tokenizer

Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files

Tokenizer

Link settings | Remove

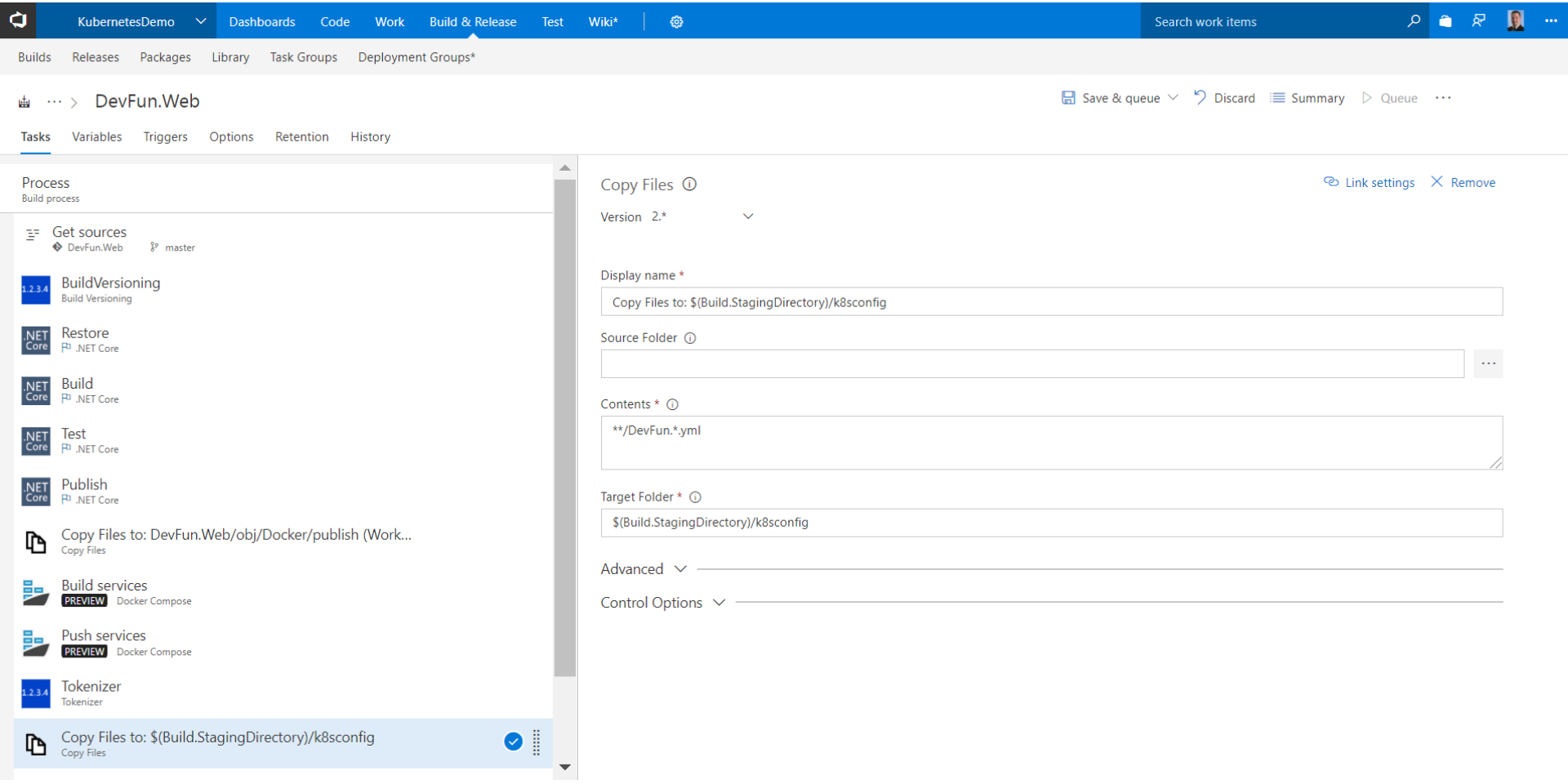
Version 0.*

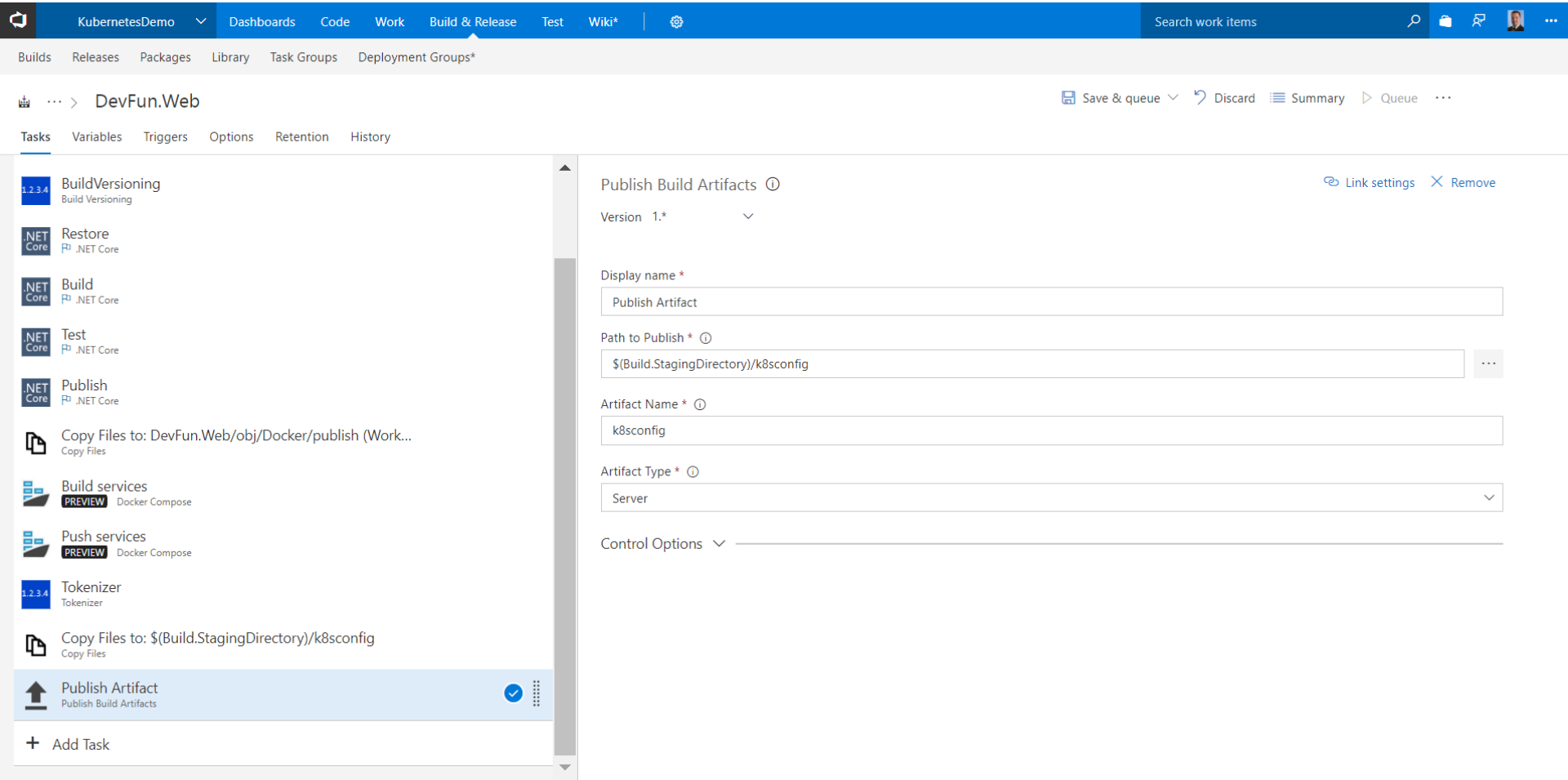
Display name *
Tokenizer

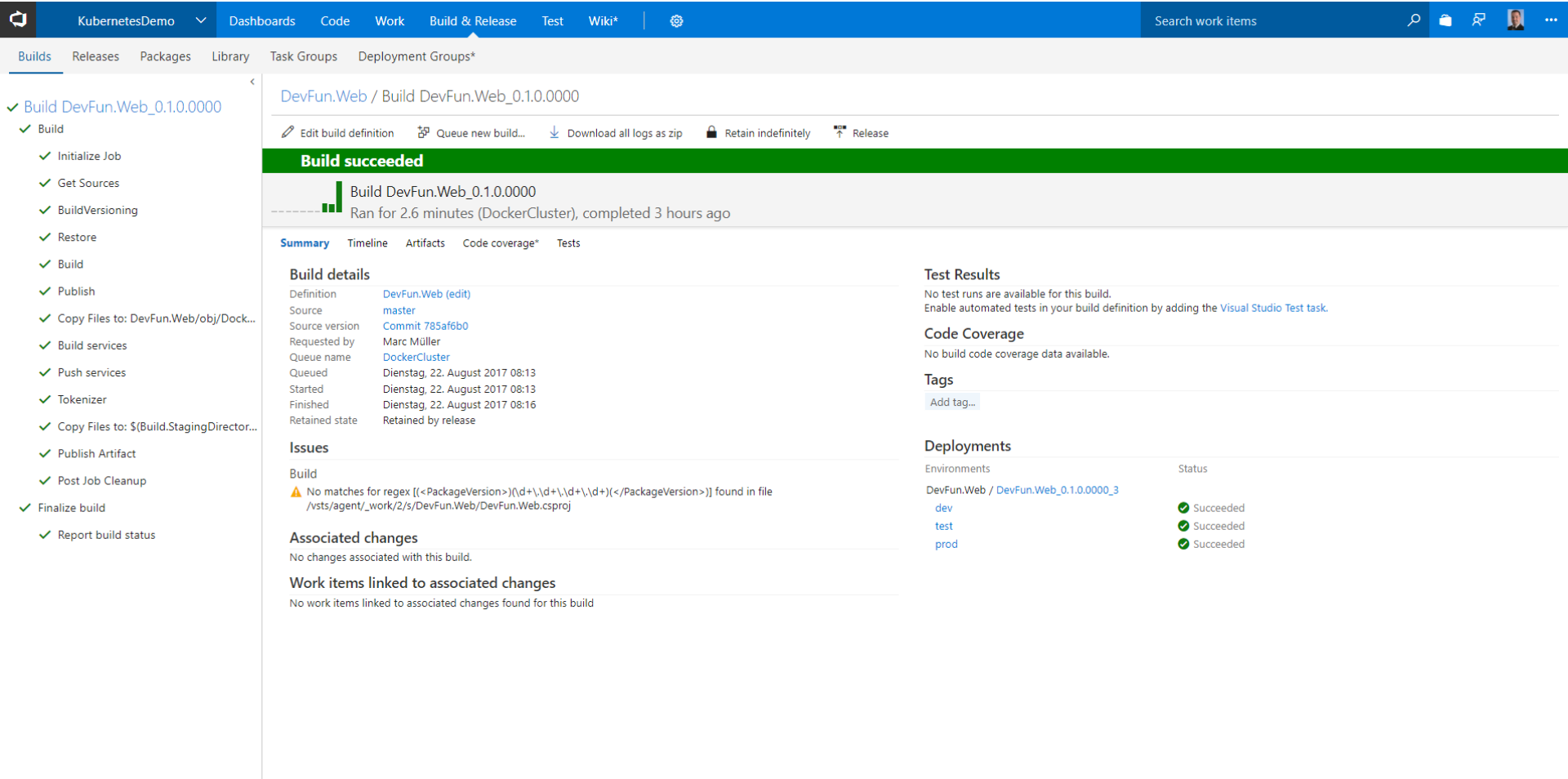
Source Files Pattern
**/DevFun.*.yml

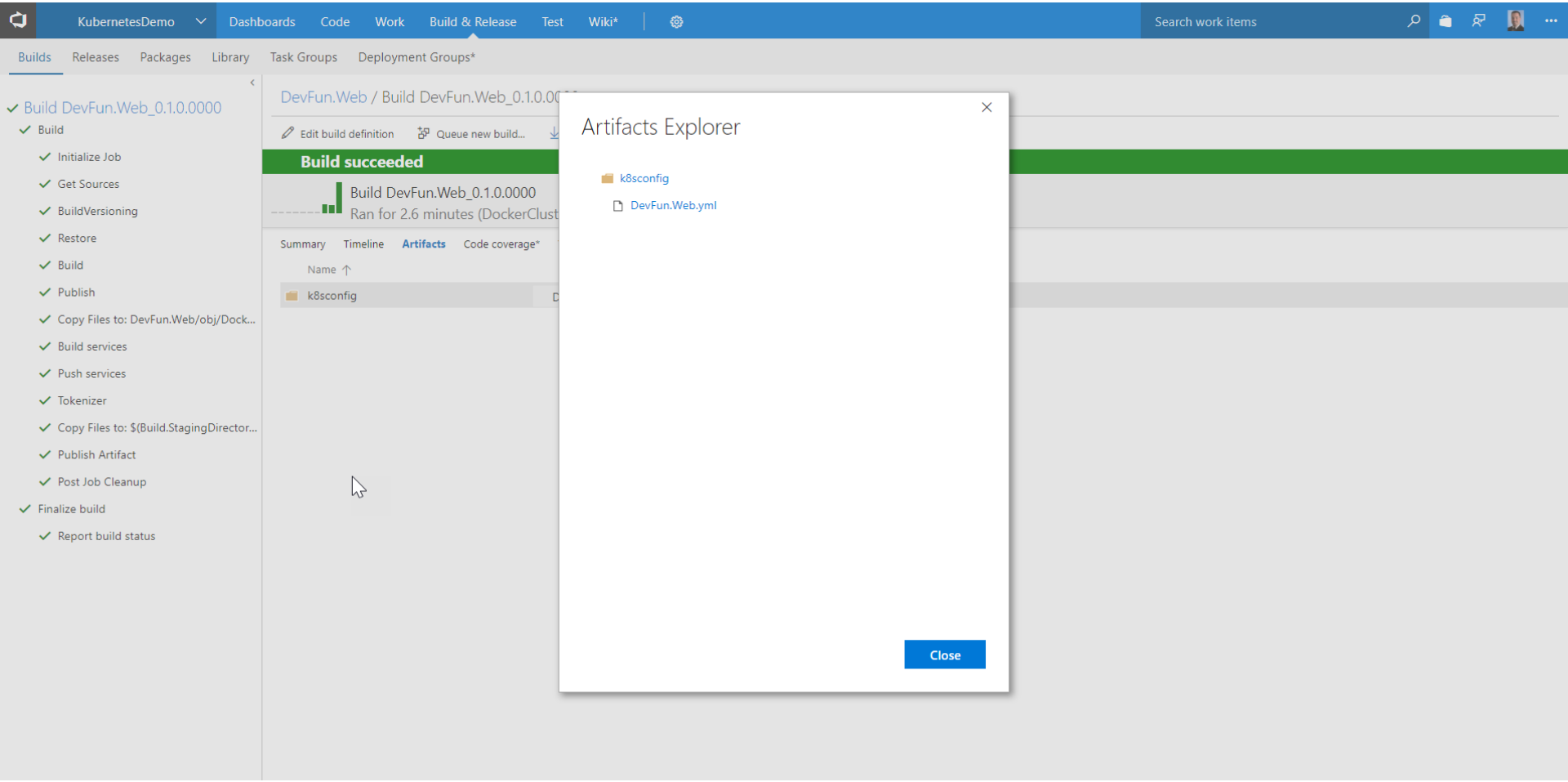
Token Data Source *
Environment Variables

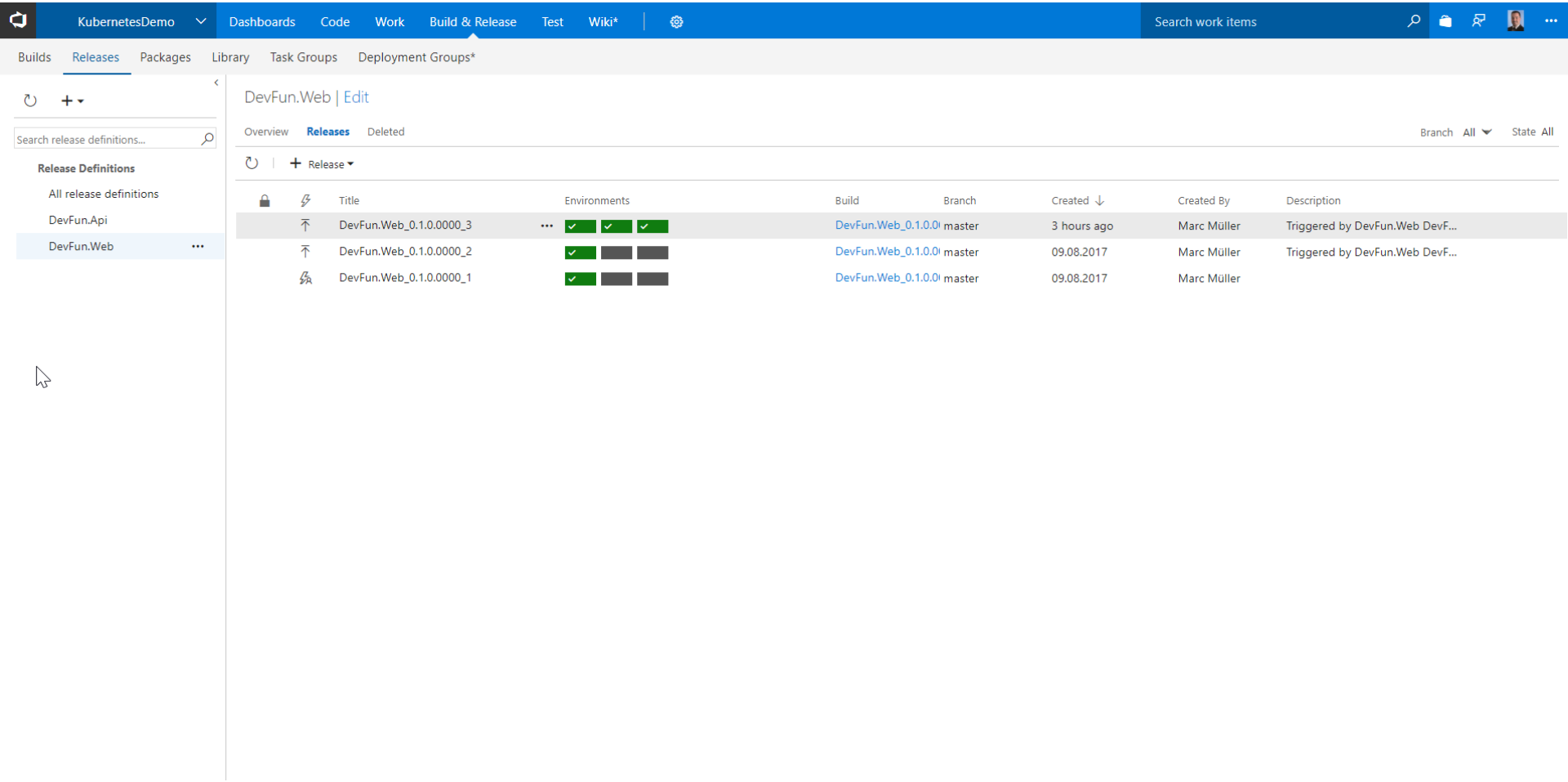
```
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: devfun-services-web
  namespace: devfun-__Release.EnvironmentName__
spec:
  replicas: __DeploymentReplicaCount__
  strategy:
    type: RollingUpdate
  template:
    metadata:
      labels:
        app: devfun-services-web-__Release.EnvironmentName__
    spec:
      containers:
      - name: devfun-services-web
        image: 4tkubernetesdemoregistry.azurecr.io/devfun.web:__BuildVersion.BuildNumber__
        ports:
```

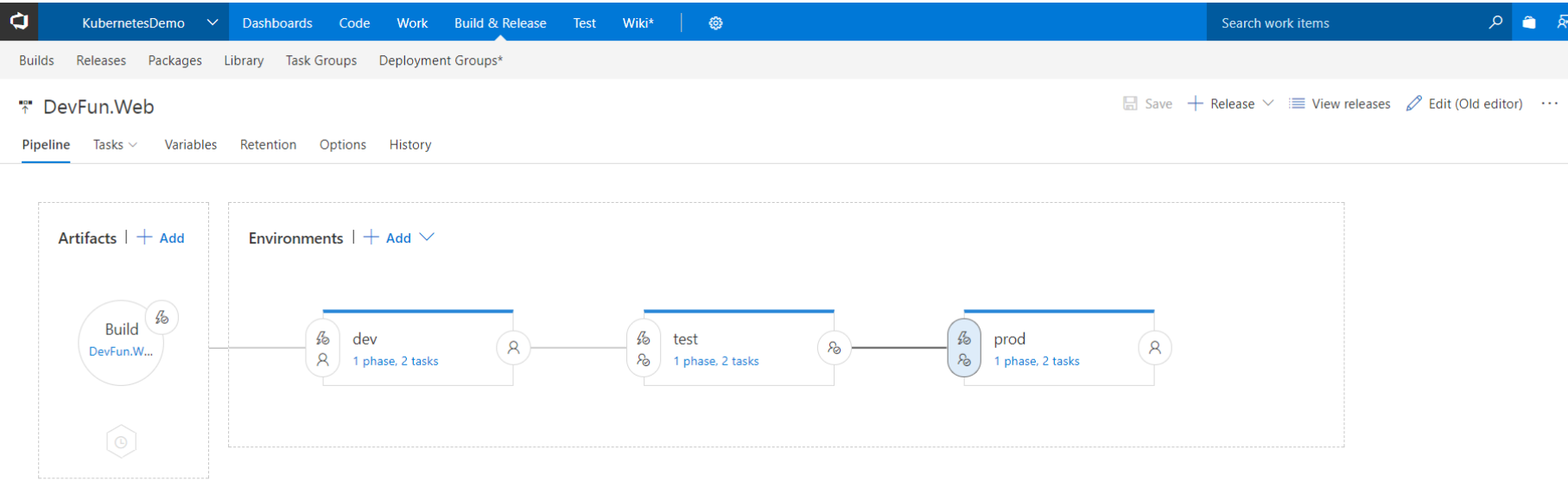

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Web
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Copy Files
Link settings
Remove
Version 2.*
Display name *
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Source Folder
Contents *
**/DevFun.*.yml
Target Folder *
$(Build.StagingDirectory)/k8sconfig
Advanced
Control Options

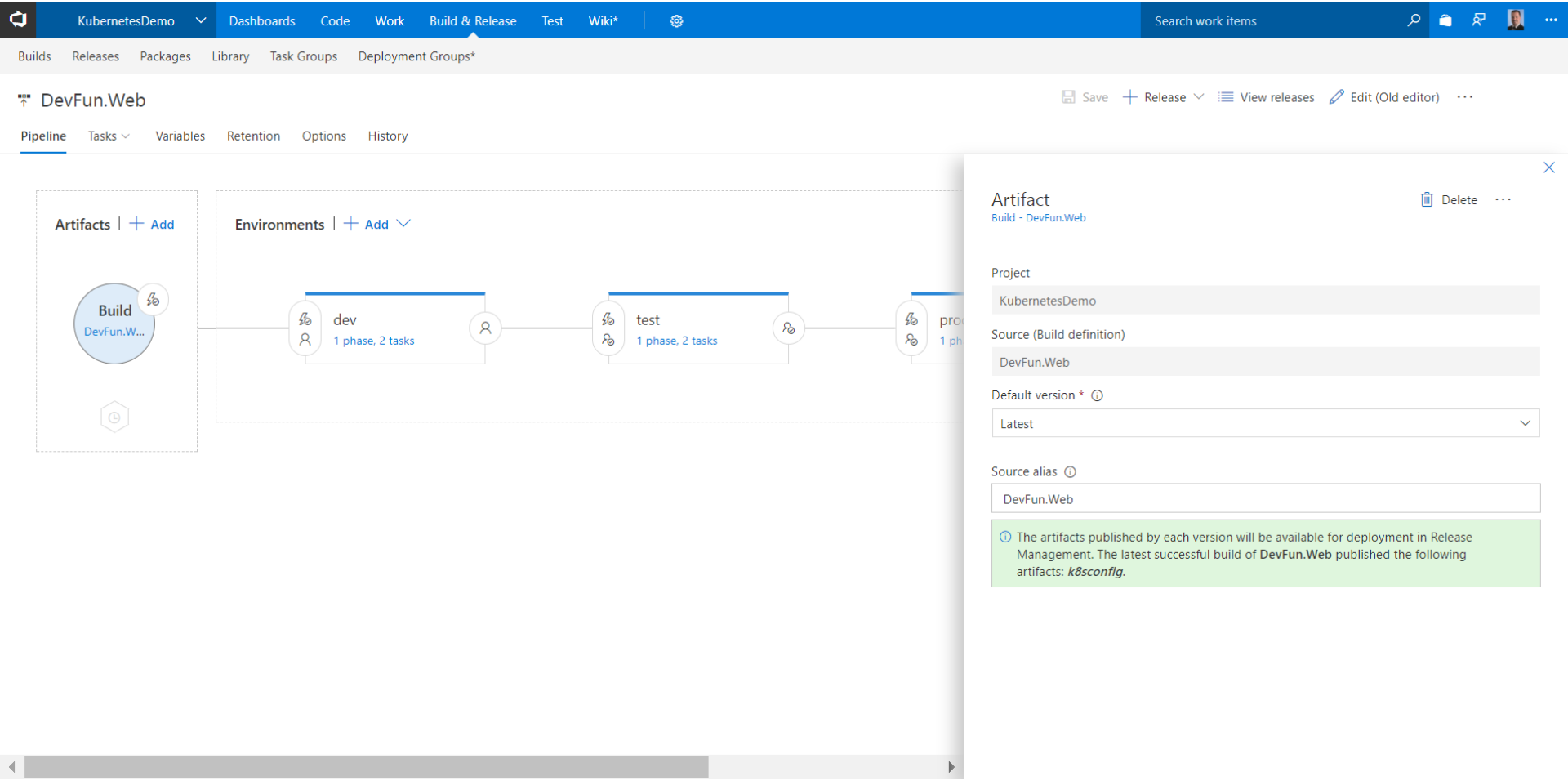

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
.NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publish (Work...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sconfig
Copy Files
Publish Artifact
Publish Build Artifacts
Add Task
Publish Build Artifacts
Link settings
Remove
Version 1.*
Display name *
Publish Artifact
Path to Publish *
$(Build.StagingDirectory)/k8sconfig
Artifact Name *
k8sconfig
Artifact Type *
Server
Control Options

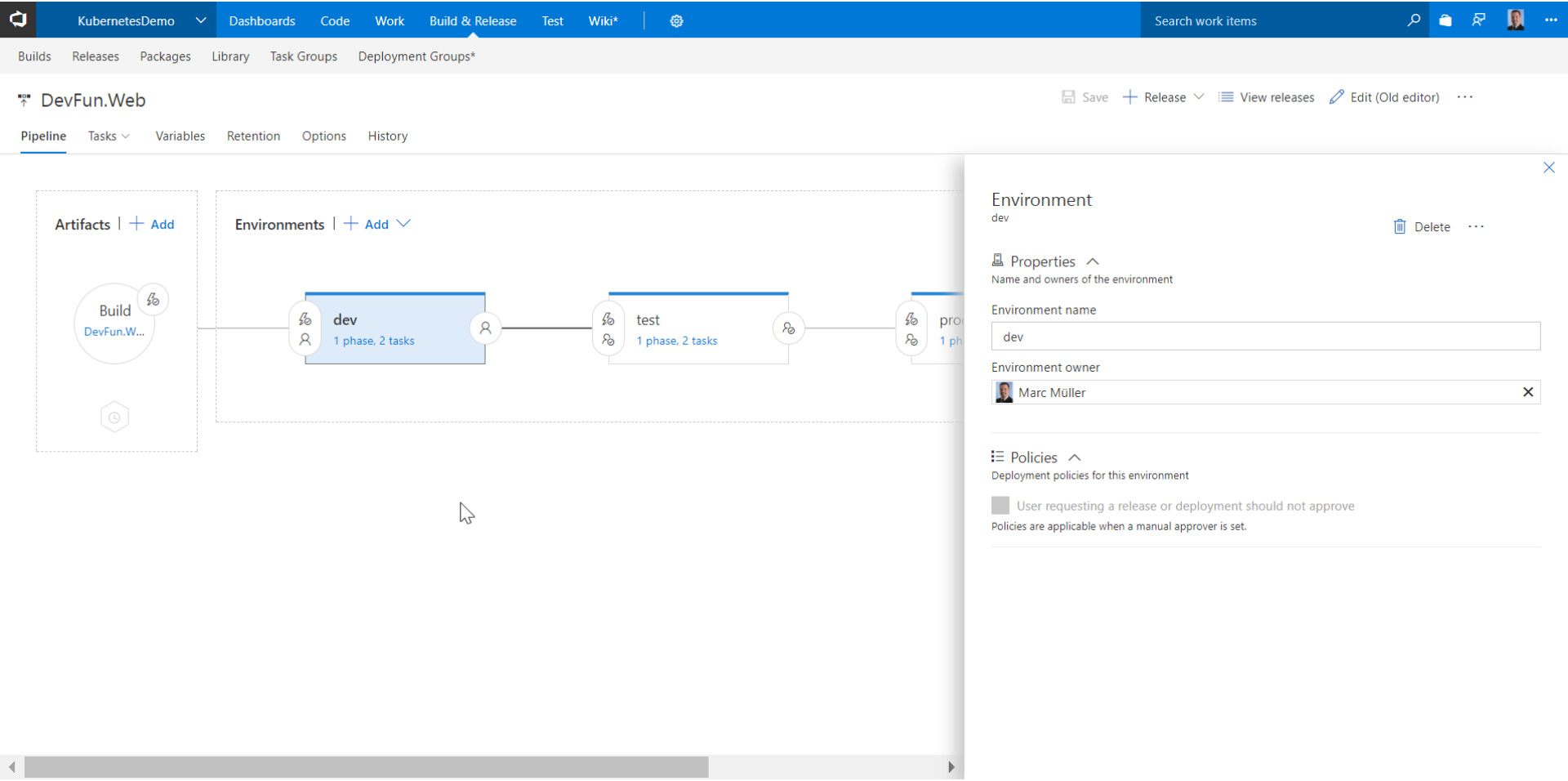

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
Build DevFun.Web_0.1.0.0000
Build
Initialize Job
Get Sources
BuildVersioning
Restore
Build
Publish
Copy Files to: DevFun.Web/obj/Dock...
Build services
Push services
Tokenizer
Copy Files to: $(Build.StagingDirector...
Publish Artifact
Post Job Cleanup
Finalize build
Report build status
DevFun.Web / Build DevFun.Web_0.1.0.0000
Edit build definition
Queue new build...
Download all logs as zip
Retain indefinitely
Release
Build succeeded
Build DevFun.Web_0.1.0.0000
Ran for 2.6 minutes (DockerCluster), completed 3 hours ago
Summary
Timeline
Artifacts
Code coverage*
Tests
Build details
Definition DevFun.Web (edit)
Source master
Source version Commit 785af6b0
Requested by Marc Müller
Queue name DockerCluster
Queued Dienstag, 22. August 2017 08:13
Started Dienstag, 22. August 2017 08:13
Finished Dienstag, 22. August 2017 08:16
Retained state Retained by release
Issues
Build
No matches for regex [(<PackageVersion>)(\d+\.\d+\.\d+\.\d+)(</PackageVersion>)] found in file /vsts/agent/_work/2/s/DevFun.Web/DevFun.Web.csproj
Associated changes
No changes associated with this build.
Work items linked to associated changes
No work items linked to associated changes found for this build
Test Results
No test runs are available for this build.
Enable automated tests in your build definition by adding the Visual Studio Test task.
Code Coverage
No build code coverage data available.
Tags
Add tag...
Deployments
Environments
Status
DevFun.Web / DevFun.Web_0.1.0.0000_3
dev Succeeded
test Succeeded
prod Succeeded

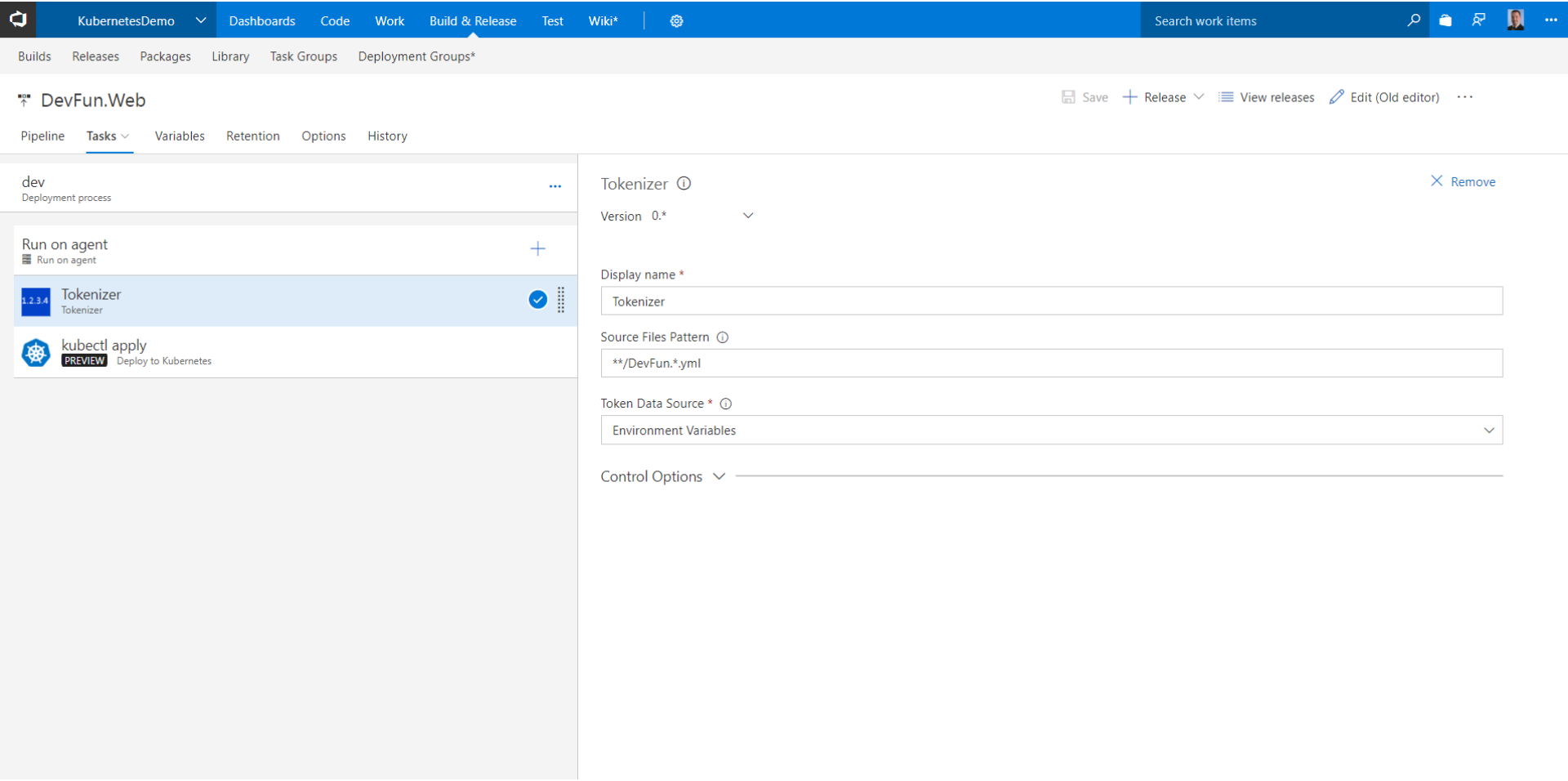

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
Build DevFun.Web_0.1.0.0000
Build
Initialize Job
Get Sources
BuildVersioning
Restore
Build
Publish
Copy Files to: DevFun.Web/obj/Dock...
Build services
Push services
Tokenizer
Copy Files to: $(Build.StagingDirector...
Publish Artifact
Post Job Cleanup
Finalize build
Report build status
DevFun.Web / Build DevFun.Web_0.1.0.0
Edit build definition
Queue new build...
Build succeeded
Build DevFun.Web_0.1.0.0000
Ran for 2.6 minutes (DockerClust
Summary
Timeline
Artifacts
Code coverage*
Name
k8sconfig
Artifacts Explorer
k8sconfig
DevFun.Web.yml
Close

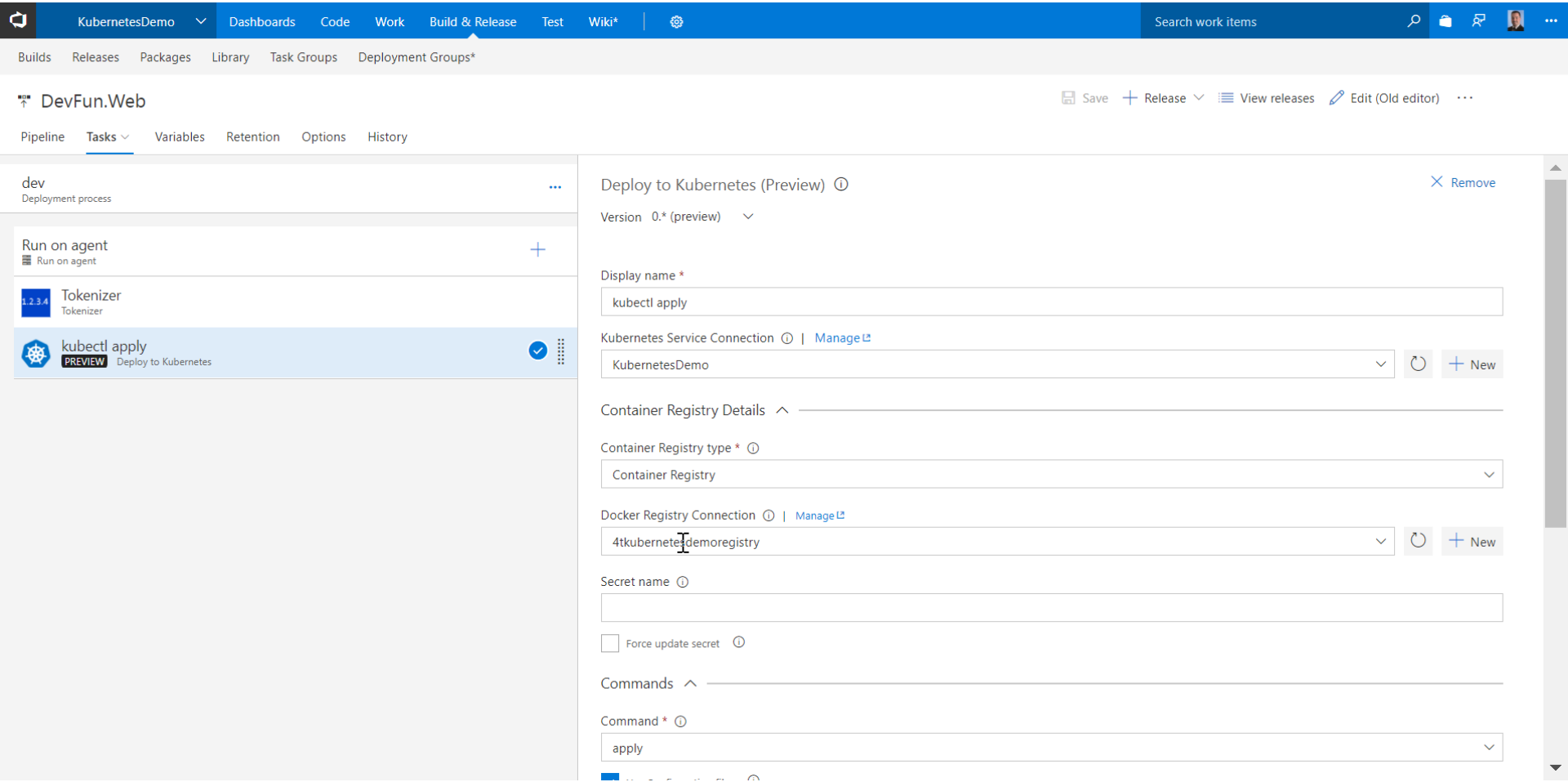

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
Search release definitions...
Release Definitions
All release definitions
DevFun.Api
DevFun.Web
DevFun.Web | Edit
Overview
Releases
Deleted
Branch All
State All
Release
Title
Environments
Build
Branch
Created
Created By
Description
DevFun.Web_0.1.0.0000_3
DevFun.Web_0.1.0.0000_2
DevFun.Web_0.1.0.0000_1
master
3 hours ago
09.08.2017
Marc Müller
Triggered by DevFun.Web DevF...

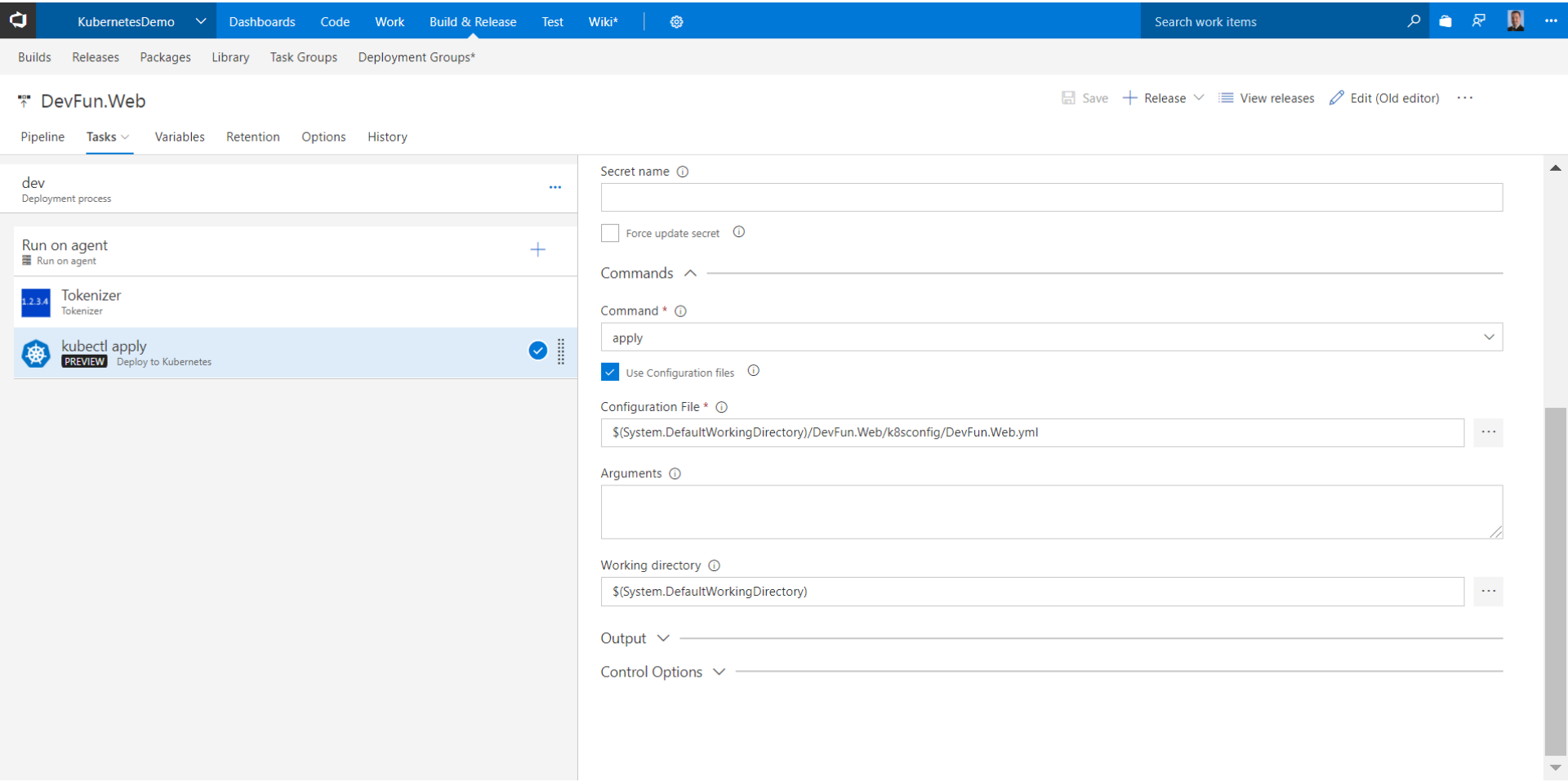

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Build
DevFun.W...
Environments
Add
dev
1 phase, 2 tasks
test
1 phase, 2 tasks
prod
1 phase, 2 tasks


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Build
DevFun.W...
Environments
Add
dev
1 phase, 2 tasks
test
1 phase, 2 tasks
Artifact
Build - DevFun.Web
Delete
Project
KubernetesDemo
Source (Build definition)
DevFun.Web
Default version *
Latest
Source alias
DevFun.Web
The artifacts published by each version will be available for deployment in Release Management. The latest successful build of DevFun.Web published the following artifacts: k8sconfig.


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Build
DevFun.W...
Environments
Add
dev
1 phase, 2 tasks
test
1 phase, 2 tasks
Environment
dev
Delete
Properties
Name and owners of the environment
Environment name
dev
Environment owner
Marc Müller
Policies
Deployment policies for this environment
User requesting a release or deployment should not approve
Policies are applicable when a manual approver is set.


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
dev
Deployment process
Run on agent
Run on agent
Tokenizer
Tokenizer
kubectl apply
PREVIEW
Deploy to Kubernetes
Tokenizer
Remove
Version 0.*
Display name *
Tokenizer
Source Files Pattern
**/DevFun.*.yml
Token Data Source *
Environment Variables
Control Options


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
dev
Deployment process
Run on agent
Run on agent
Tokenizer
Tokenizer
kubectl apply
PREVIEW
Deploy to Kubernetes
Deploy to Kubernetes (Preview)
Remove
Version 0.* (preview)
Display name *
kubectl apply
Kubernetes Service Connection | Manage
KubernetesDemo
New
Container Registry Details
Container Registry type *
Container Registry
Docker Registry Connection | Manage
4tkubernetesdemoregistry
New
Secret name
Force update secret
Commands
Command *
apply


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
dev
Deployment process
Run on agent
Run on agent
Tokenizer
Tokenizer
kubectl apply
PREVIEW
Deploy to Kubernetes
Secret name
Force update secret
Commands
Command *
apply
Use Configuration files
Configuration File *
$(System.DefaultWorkingDirectory)/DevFun.Web/k8sconfig/DevFun.Web.yml
Arguments
Working directory
$(System.DefaultWorkingDirectory)
Output
Control Options

DevFun.Web

Save | Release | View releases | Edit (Old editor) | ...

Pipeline | Tasks | Variables | Retention | Options | History

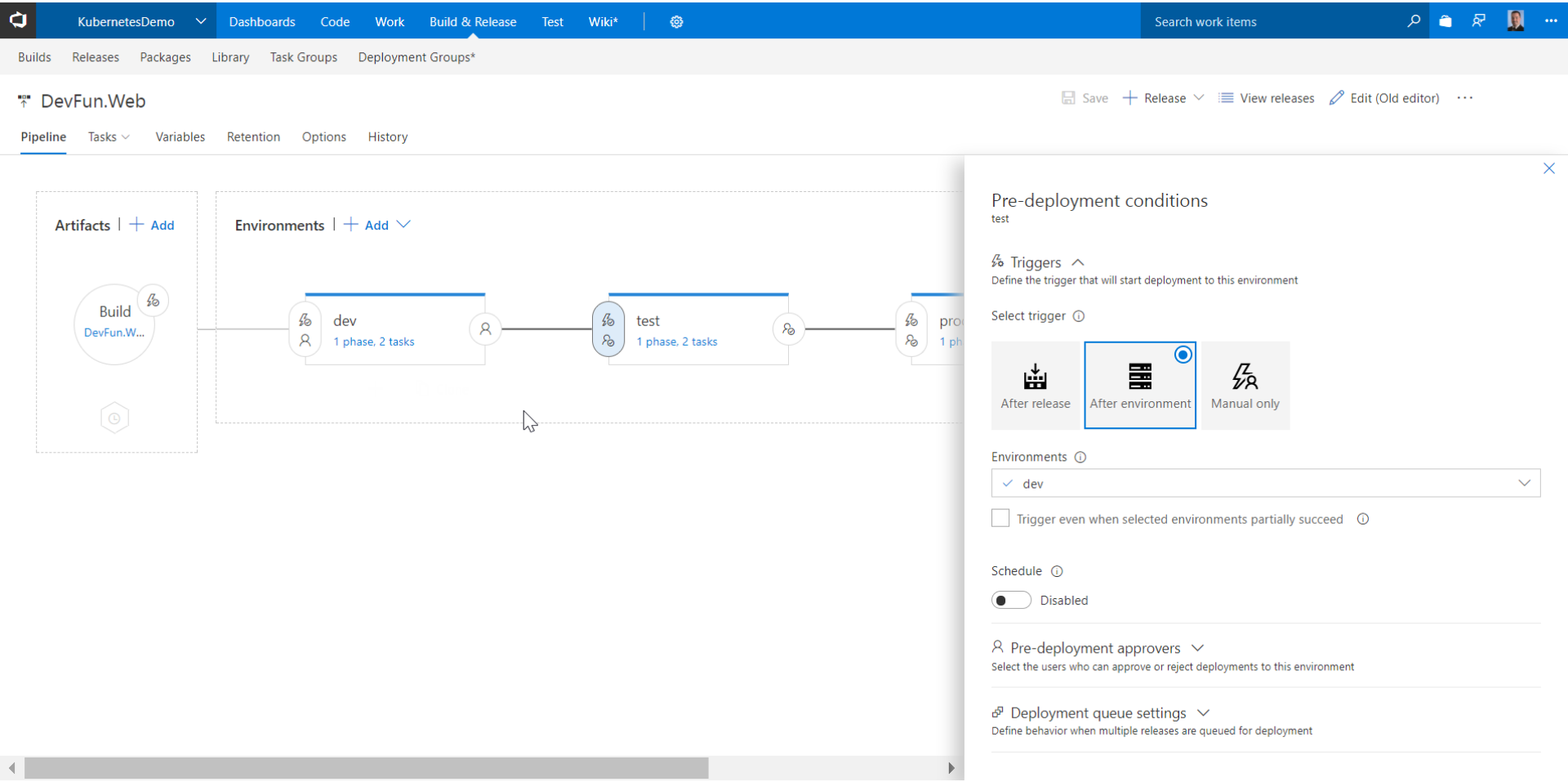
Process variables

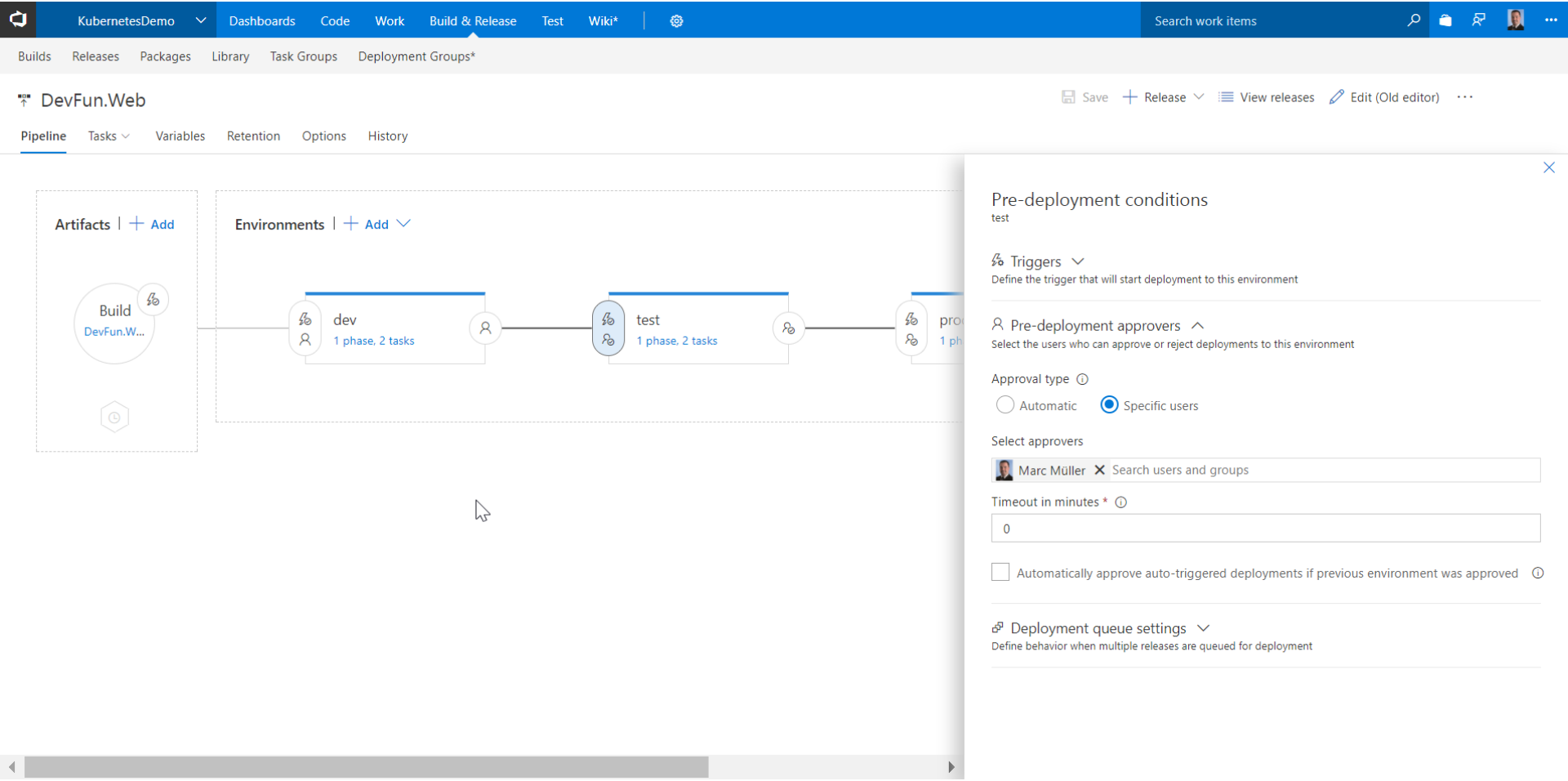
Variable groups

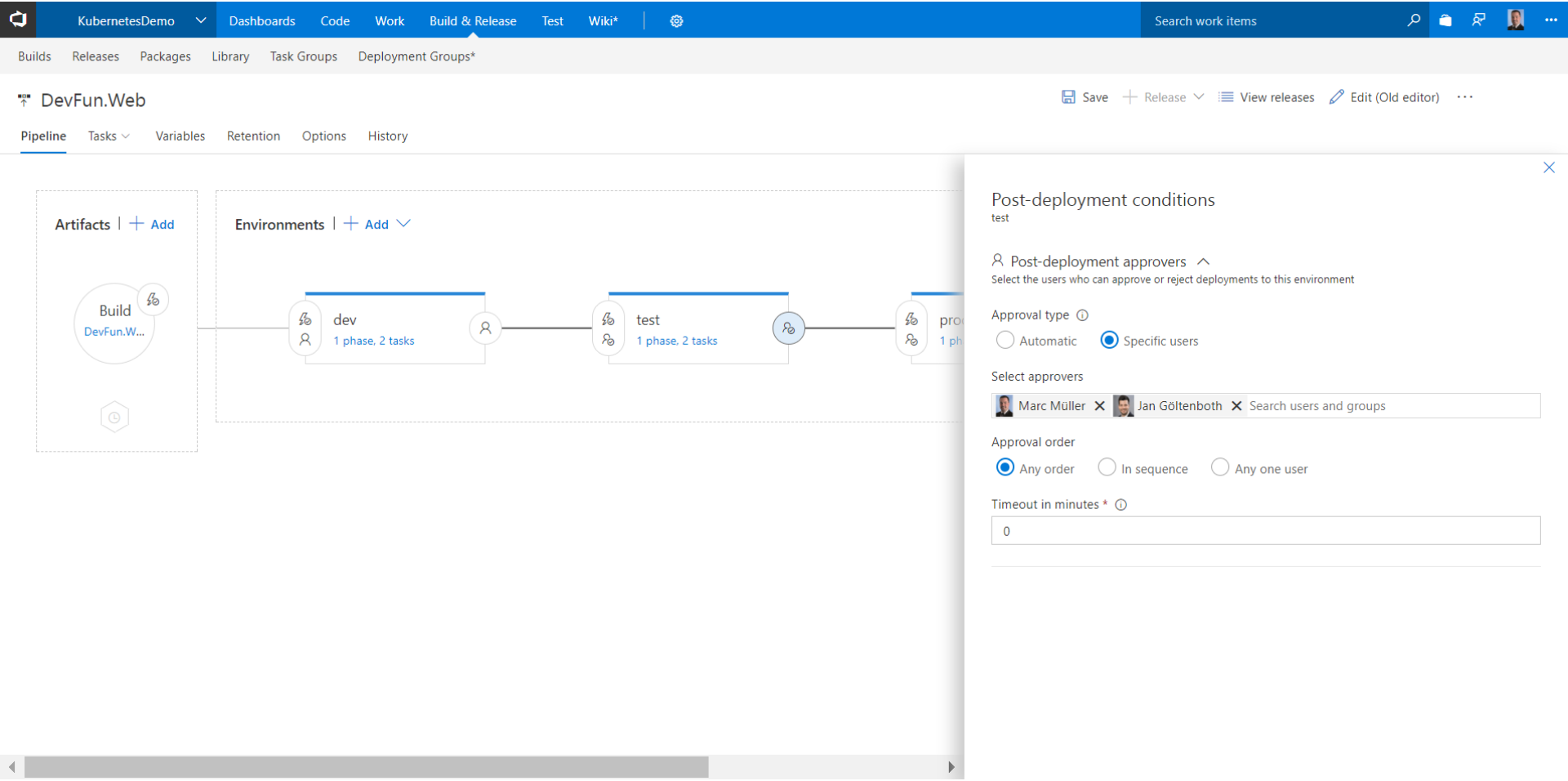
Predefined variables

Name	Value	Scope
DeploymentReplicaCount	1	dev
DeploymentReplicaCount	1	test
DeploymentReplicaCount	1	prod
ServiceUrl	api.devfun.dev.demo.4tecture.ch	dev
ServiceUrl	api.devfun.dev.demo.4tecture.ch	test
ServiceUrl	api.devfun.dev.demo.4tecture.ch	prod

Add


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Build
DevFun.W...
Environments
Add
dev
1 phase, 2 tasks
test
1 phase, 2 tasks
Pre-deployment conditions
test
Triggers
Define the trigger that will start deployment to this environment
Select trigger
After release
After environment
Manual only
Environments
dev
Trigger even when selected environments partially succeed
Schedule
Disabled
Pre-deployment approvers
Select the users who can approve or reject deployments to this environment
Deployment queue settings
Define behavior when multiple releases are queued for deployment

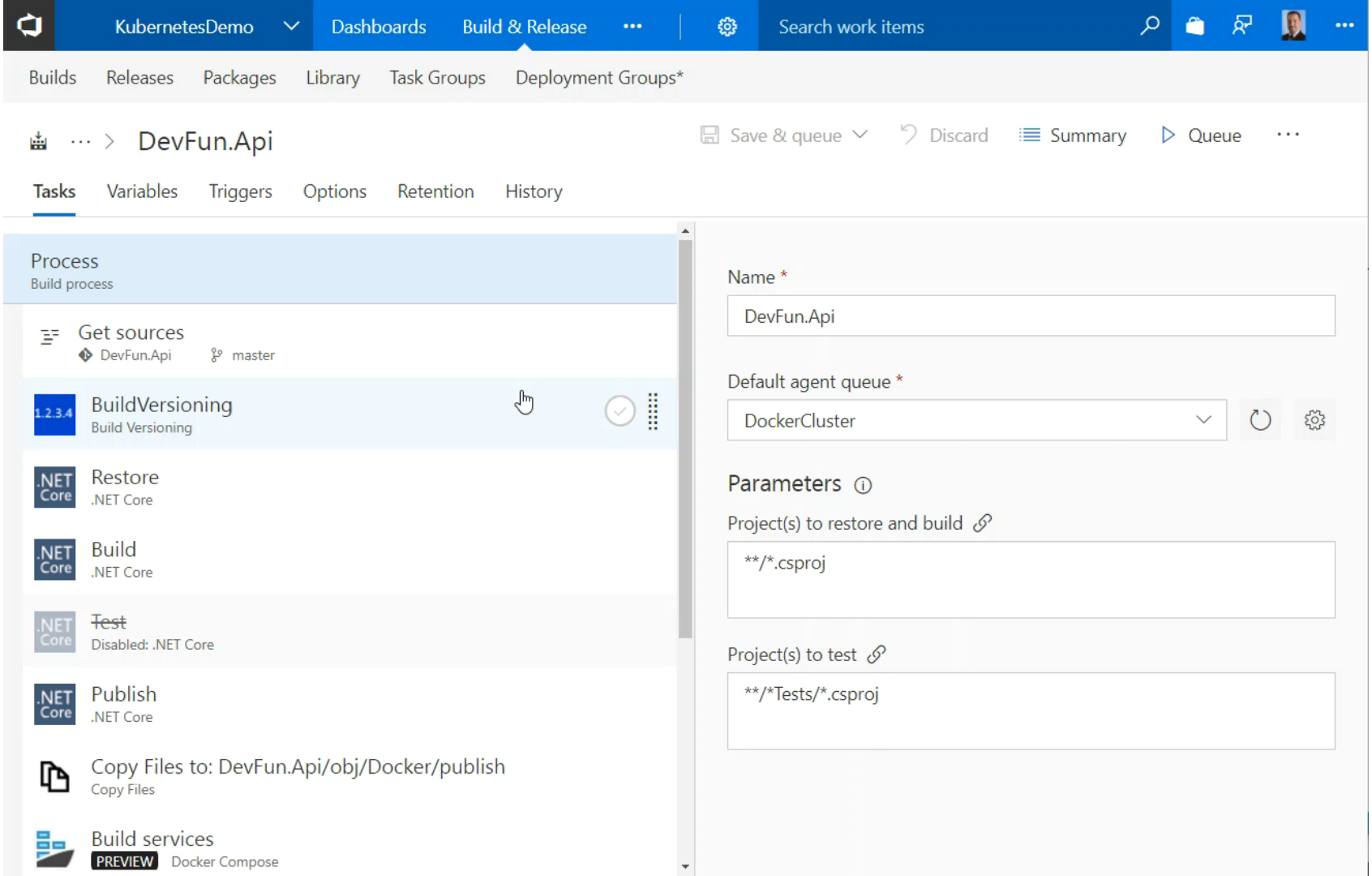

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Build
DevFun.W...
Environments
Add
dev
1 phase, 2 tasks
test
1 phase, 2 tasks
Pre-deployment conditions
test
Triggers
Define the trigger that will start deployment to this environment
Pre-deployment approvers
Select the users who can approve or reject deployments to this environment
Approval type
Automatic
Specific users
Select approvers
Marc Müller
Search users and groups
Timeout in minutes *
0
Automatically approve auto-triggered deployments if previous environment was approved
Deployment queue settings
Define behavior when multiple releases are queued for deployment

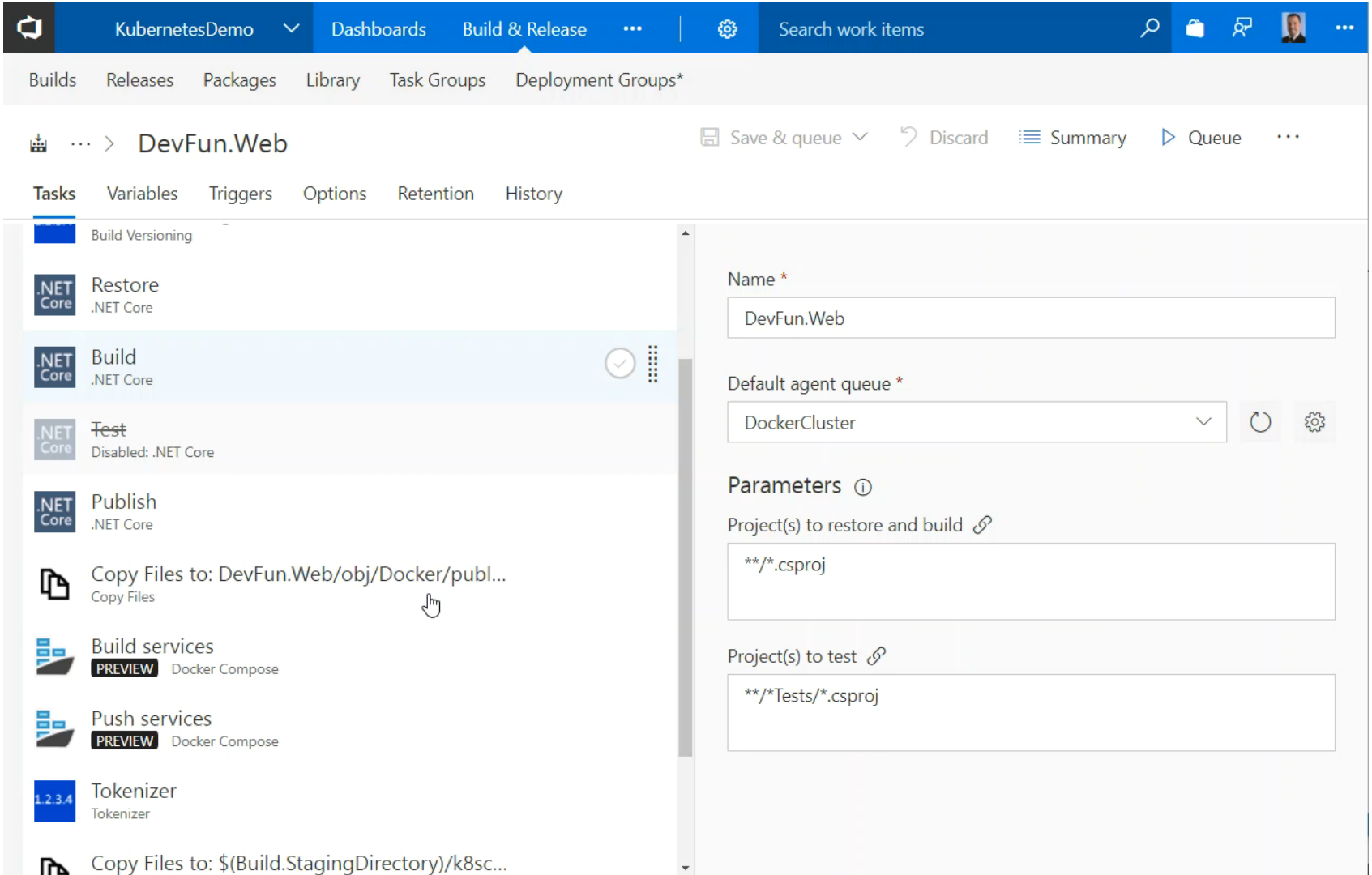

KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save
Release
View releases
Edit (Old editor)
Pipeline
Tasks
Variables
Retention
Options
History
Artifacts
Add
Build
DevFun.W...
Environments
Add
dev
1 phase, 2 tasks
test
1 phase, 2 tasks
Post-deployment conditions
test
Post-deployment approvers
Select the users who can approve or reject deployments to this environment
Approval type
Automatic
Specific users
Select approvers
Marc Müller
Jan Göltenboth
Search users and groups
Approval order
Any order
In sequence
Any one user
Timeout in minutes *
0

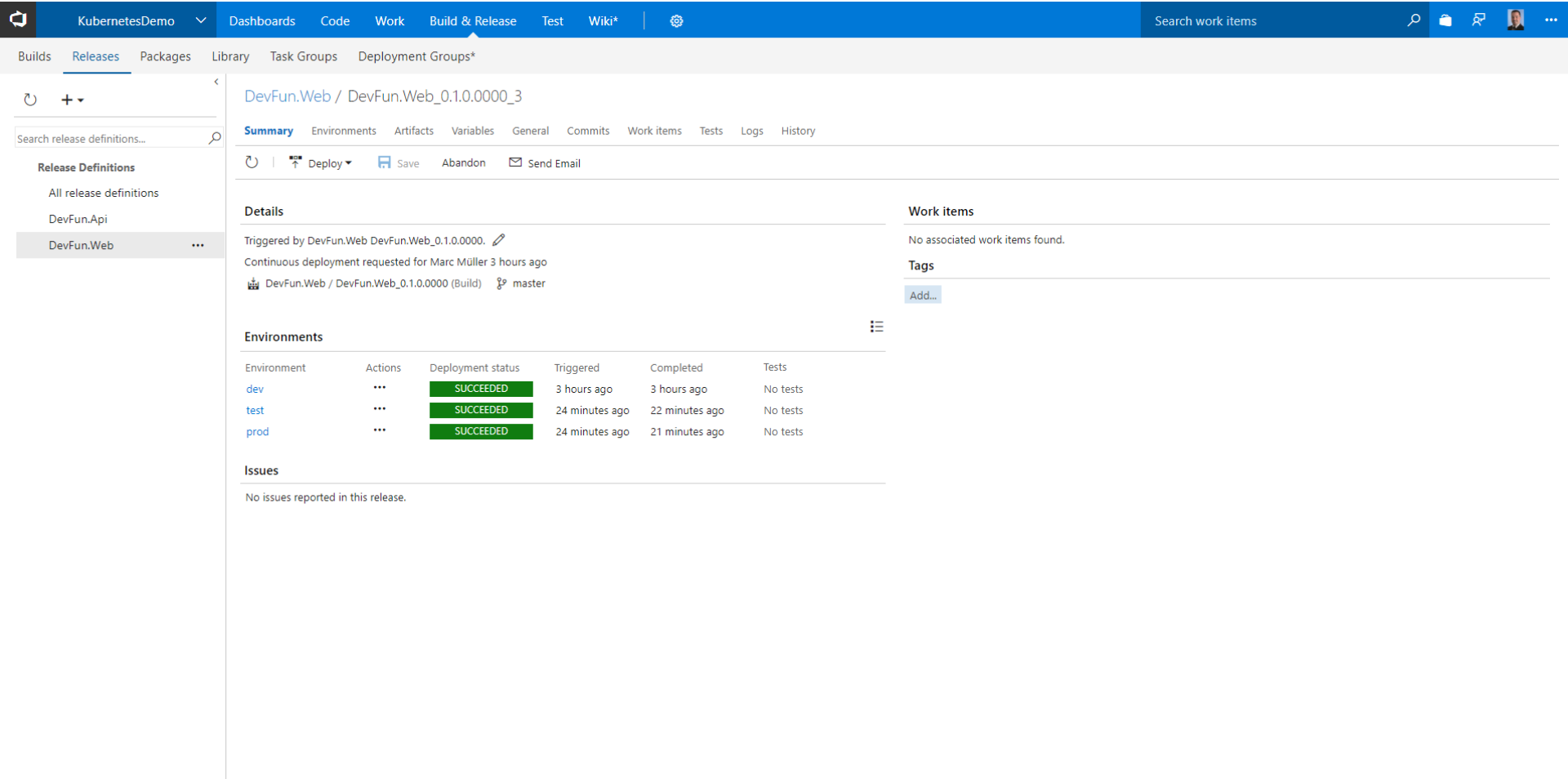
Demo Content

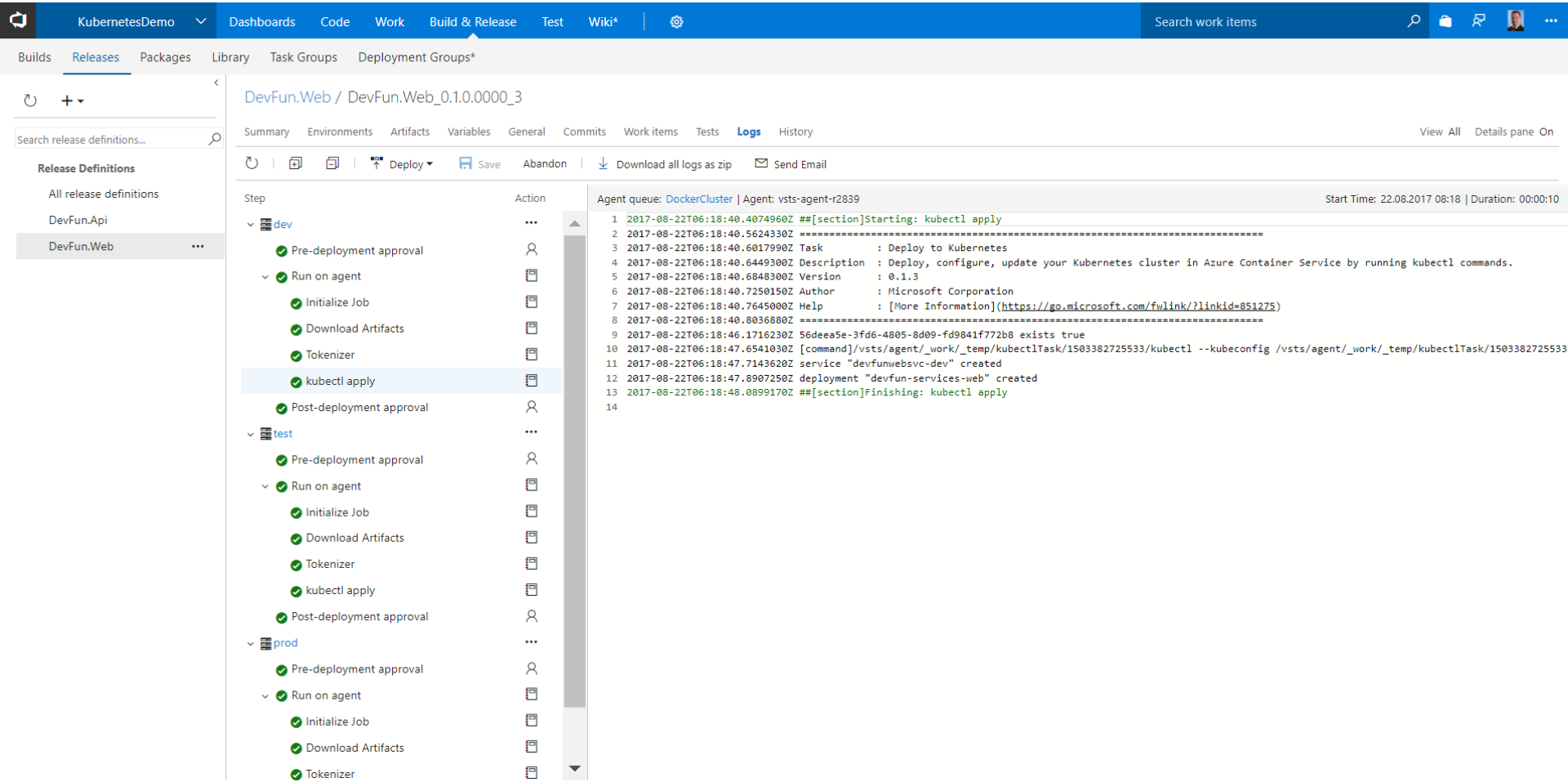
Build and Release Process (Run)

- Compile the application
- Create Docker Image
- Upload Docker Image
- Create Kubernetes Artifacts
- Apply new Kubernetes Deployments in Namespace


KubernetesDemo
Dashboards
Build & Release
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Api
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Process
Build process
Get sources
DevFun.Api
master
BuildVersioning
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
Disabled: .NET Core
Publish
.NET Core
Copy Files to: DevFun.Api/obj/Docker/publish
Copy Files
Build services
PREVIEW
Docker Compose
Name *
DevFun.Api
Default agent queue *
DockerCluster
Parameters
Project(s) to restore and build
**/*.csproj
Project(s) to test
**/*Tests/*.csproj


KubernetesDemo
Dashboards
Build & Release
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
DevFun.Web
Save & queue
Discard
Summary
Queue
Tasks
Variables
Triggers
Options
Retention
History
Build Versioning
Restore
.NET Core
Build
.NET Core
Test
Disabled: .NET Core
Publish
.NET Core
Copy Files to: DevFun.Web/obj/Docker/publ...
Copy Files
Build services
PREVIEW
Docker Compose
Push services
PREVIEW
Docker Compose
Tokenizer
Tokenizer
Copy Files to: $(Build.StagingDirectory)/k8sc...
Name *
DevFun.Web
Default agent queue *
DockerCluster
Parameters
Project(s) to restore and build
**/*.csproj
Project(s) to test
**/*Tests/*.csproj


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
Search release definitions...
Release Definitions
All release definitions
DevFun.Api
DevFun.Web
DevFun.Web / DevFun.Web_0.1.0.0000_3
Summary
Environments
Artifacts
Variables
General
Commits
Work items
Tests
Logs
History
Deploy
Save
Abandon
Send Email
Details
Triggered by DevFun.Web DevFun.Web_0.1.0.0000.
Continuous deployment requested for Marc Müller 3 hours ago
DevFun.Web / DevFun.Web_0.1.0.0000 (Build)
master
Work items
No associated work items found.
Tags
Add...
Environments
Environment
Actions
Deployment status
Triggered
Completed
Tests
dev
SUCCEEDED
3 hours ago
3 hours ago
No tests
test
SUCCEEDED
24 minutes ago
22 minutes ago
No tests
prod
SUCCEEDED
24 minutes ago
21 minutes ago
No tests
Issues
No issues reported in this release.


KubernetesDemo
Dashboards
Code
Work
Build & Release
Test
Wiki*
Search work items
Builds
Releases
Packages
Library
Task Groups
Deployment Groups*
Search release definitions...
Release Definitions
All release definitions
DevFun.Api
DevFun.Web
DevFun.Web / DevFun.Web_0.1.0.0000_3
Summary
Environments
Artifacts
Variables
General
Commits
Work items
Tests
Logs
History
View All
Details pane On
Deploy
Save
Abandon
Download all logs as zip
Send Email
Step
Action
dev
Pre-deployment approval
Run on agent
Initialize Job
Download Artifacts
Tokenizer
kubectl apply
Post-deployment approval
test
Pre-deployment approval
Run on agent
Initialize Job
Download Artifacts
Tokenizer
kubectl apply
Post-deployment approval
prod
Pre-deployment approval
Run on agent
Initialize Job
Download Artifacts
Tokenizer
Agent queue: DockerCluster | Agent: vsts-agent-r2839
Start Time: 22.08.2017 08:18 | Duration: 00:00:10
1 2017-08-22T06:18:40.4074960Z ##[section]Starting: kubectl apply
2 2017-08-22T06:18:40.5624330Z ==
3 2017-08-22T06:18:40.6017990Z Task : Deploy to Kubernetes
4 2017-08-22T06:18:40.6449300Z Description : Deploy, configure, update your Kubernetes cluster in Azure Container Service by running kubectl commands.
5 2017-08-22T06:18:40.6848300Z Version : 0.1.3
6 2017-08-22T06:18:40.7250150Z Author : Microsoft Corporation
7 2017-08-22T06:18:40.7645000Z Help : [More Information](https://go.microsoft.com/fwlink/?linkid=851275)
8 2017-08-22T06:18:40.8036880Z ==
9 2017-08-22T06:18:46.1716230Z 56deea5e-3fd6-4805-8d09-fd9841f772b8 exists true
10 2017-08-22T06:18:47.6541030Z [command]/vsts/agent/_work/_temp/kubectlTask/1503382725533/kubectl --kubeconfig /vsts/agent/_work/_temp/kubectlTask/1503382725533
11 2017-08-22T06:18:47.7143620Z service "devfunwebsvc-dev" created
12 2017-08-22T06:18:47.8907250Z deployment "devfun-services-web" created
13 2017-08-22T06:18:48.0899170Z ##[section]Finishing: kubectl apply
14

Kubernetes Controller – Let's Encrypt Certificates

4tecture
empower your software solutions

Create Certificates on the Fly

kube-lego requests certificates
for Kubernetes Ingress resources

Automatic checking for certificates

Available for

Nginx Ingress Controller

GCE Loadbalancers

!!! Non-production use cases !!!

```yaml
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: ingress-dev
  namespace: devfun-dev
  annotations:
    kubernetes.io/tls-acme: "true"
    kubernetes.io/ingress.class: "nginx"
spec:
  tls:
  - secretName: devfunapi-dev-tls
    hosts:
    - api.devfun.dev.demo.4tecture.ch
  - secretName: devfunweb-dev-tls
    hosts:
    - www.devfun.dev.demo.4tecture.ch
  rules:
  - host: api.devfun.dev.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunapisvc-dev
          servicePort: 80
  - host: www.devfun.dev.demo.4tecture.ch
    http:
      paths:
      - backend:
          serviceName: devfunwebsvc-dev
          servicePort: 80
```

Demo

Let’s Encrypt Controller

Demo Content

Setup Let’s Encrypt Controller

Use dedicated namespace

Create the controller

lego_namespaces.yaml

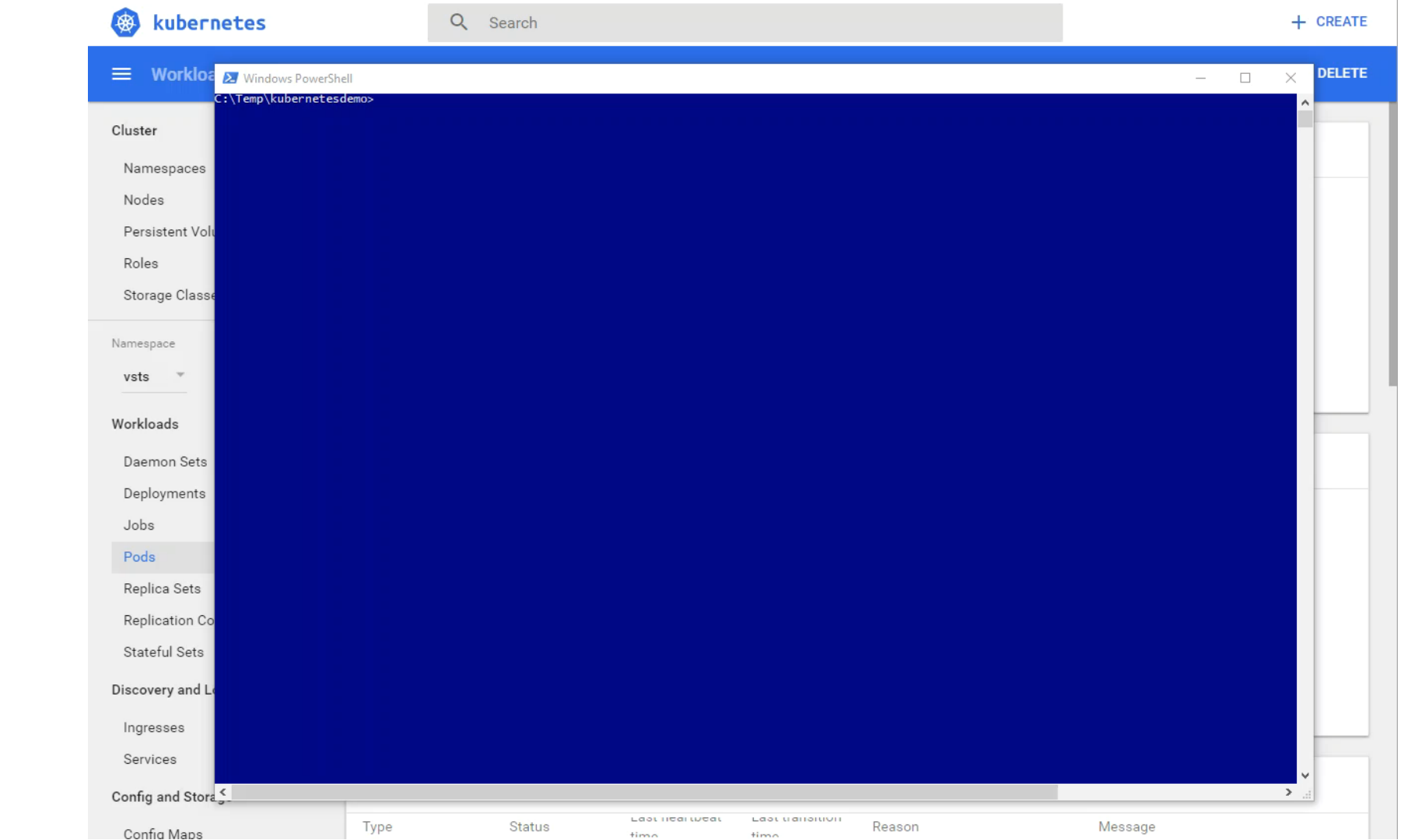
```yaml
apiVersion: v1
kind: Namespace
metadata:
  name: kube-lego
```

lego_configmap.yaml

```yaml
apiVersion: v1
metadata:
  name: kube-lego
  namespace: kube-lego
data:
  # modify this to specify your address
  lego.email: "info@4tecture.ch"
  # configure letsencrypt's production api
  lego.url: "https://acme-v01.api.letsencrypt.org/directory"
kind: ConfigMap
```

lego_deployment.yaml

```yaml
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: kube-lego
  namespace: kube-lego
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: kube-lego
    spec:
      containers:
      - name: kube-lego
        image: jetstack/kube-lego:0.1.4
        imagePullPolicy: Always
        ports:
        - containerPort: 8080
        env:
        - name: LEGO_EMAIL
          valueFrom:
            configMapKeyRef:
              name: kube-lego
              key: lego.email
        - name: LEGO_URL
          valueFrom:
            configMapKeyRef:
              name: kube-lego
              key: lego.url
        - name: LEGO_NAMESPACE
          valueFrom:
            fieldRef:
              fieldPath: metadata.namespace
        - name: LEGO_POD_IP
          valueFrom:
            fieldRef:
              fieldPath: status.podIP
        readinessProbe:
          httpGet:
            path: /healthz
            port: 8080
          initialDelaySeconds: 5
          timeoutSeconds: 1
```


kubernetes
Search
CREATE
DELETE
Windows PowerShell
C:\Temp\kubernetesdemo>
Cluster
Namespaces
Nodes
Persistent Volu
Roles
Storage Classe
Namespace
vsts
Workloads
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Co
Stateful Sets
Discovery and L
Ingresses
Services
Config and Stora
Config Maps
Type
Status
Reason
Message

Recap
4tecture
empower your software solutions

Recap

- Microservice Architecture
  - Reduction of complexity
  - Simple and fast deployments
- Automated Build and Release Pipelines
- Docker
  - Isolation in Containers
  - Ease of deployment
  - Fast Startup
- Orchestration
  - Enterprise Grade Hosting Environments
  - Simple Scaling and Failover
  - Abstration at Container Level

Thank you for your attention!

If you have any questions do not hesitate to contact us:

4tecture GmbH
Aathalstrasse 84
CH-8610 Uster

Marc Müller
Principal Consultant

+41 44 508 37 00
info@4tecture.ch
www.4tecture.ch

marc.mueller@4tecture.ch
@muellermarc

Q & A
4tecture
empower your software solutions

We are looking for great talents to join our team!
Apply to job@4tecture.ch
www.4tecture.ch/jobs

4tecture©
empower your software solutions

Additional Demo Resources

4tecture
empower your software solutions

Setup ACS Kubernetes Cluster

```
Param(
  [string]$vstspat = "xxxxxxx",
  [string]$subscriptionname = "xxxxxxx",
  [string]$rsakeyfile = "xxxxxxx",
  [string]$vstsaccount = "xxxxxxx"
)

### setup the cli settings
kubectl config unset contexts.demo-4t-k8s
az account set --subscription $subscriptionname
az account show
#az login #if needed

### setup kubernetes cluster
az group create -n "KubernetesDemo" -l "westeurope"
az acs create -n KubernetesDemo -d demo-4t-k8s -g KubernetesDemo --generate-ssh-keys --orchestrator-type kubernetes
az acs kubernetes get-credentials -g=KubernetesDemo -n=KubernetesDemo --ssh-key-file=$rsakeyfile
az acr create --name 4tKubernetesDemoRegistry --resource-group KubernetesDemo --sku Basic
az acr update -n 4tKubernetesDemoRegistry --admin-enabled true
$acrusername = az acr credential show -n 4tKubernetesDemoRegistry --query username
$acrpassword = az acr credential show -n 4tKubernetesDemoRegistry --query passwords[0].value
kubectl create secret docker-registry 4tkubernetesdemoregistry --docker-username=$acrusername --docker-password=$acrpassword--docker-server='4tkubernetesdemoregistry.azurecr.io' --
docker-email='info@4tecture.ch'

### deploy k8s configurations
kubectl apply -f .\devfun_namespaces.yaml
kubectl apply -f nginx-ingress-defaultbackend.yaml
kubectl apply -f nginx-ingress-controller.yaml
kubectl apply -f nginx-ingress-service.yaml
kubectl -n kube-system get po
kubectl apply -f vsts_namespaces.yaml
kubectl create secret generic vsts --from-literal=VSTS_TOKEN=$vstspat --from-literal=VSTS_ACCOUNT=$vstsaccount --namespace=vsts
kubectl apply -f vsts_agent.yaml
kubectl apply -f lego_namespaces.yaml
kubectl apply -f lego_configmap.yaml
kubectl apply -f lego_deployment.yaml
kubectl apply -f devfun_ingress-dev.yaml
kubectl apply -f devfun_ingress-test.yaml
kubectl apply -f devfun_ingress-prod.yaml
```

Kubernetes Configurations

Available at:

https://github.com/marc-mueller/acsk8sinfrastructuredemo