

Wdrożenie nAxiom w Openshift – krok po kroku

Wersja nAxiom: 1.11.3



1. Wprowadzenie

W tym artykule opisano kroki procedury wdrożenia witryny nAxiom z użyciem oprogramowania Red Hat OpenShift Container Platform. W procedurze używane są pliki konfiguracyjne z ustawieniami domyślnymi. Informacje uzupełniające na temat uruchamiania nAxiom w kontenerach zawiera artykuł Wdrożenie nAxiom z obrazów Docker.

2. Procedura wdrożenia

1. Zainstaluj platformę Red Hat OpenShift (<u>https://www.redhat.com/en/technologies/cloud-computing/openshift</u>).

2. Skopiuj pliki wymagane do uruchomienia aplikacji i utwórz następującą strukturę w katalogu wdrożenia (na przykład *C:/OpenShift*):

```
certs
o7t-internal.crt
o7t-internal.key
proxy-cert.crt
proxy-cert.key
configs
configs
config-custom.json*
nlog-custom.config*
documentation
appsettings-custom.json*
```

```
front
       config-custom.json*
    -mobile-api
       appsettings-custom.json*
    -nginx
       naxiom-buffers.conf
       naxiom-certificate.conf
       naxiom-headers.conf
       naxiom-openshift.conf
    -public-api
       appsettings-custom.json*
    -task-service
       appsettings-custom.json*
    telerik-reports
       appsettings-custom.json*
    -tenant-admin
       config-custom.json*
   -workflow
       config-custom.json*
deployments
   admin-deployment.yaml
   api-deployment.yaml
   auth-deployment.yaml
   documentation-deployment.yaml
   front-deployment.yaml
   mobile-api-deployment.yaml
   mssql-deployment.yaml
   nginx-deployment.yaml
```

```
public-api-deployment.yaml
   syncfusion-api-deployment.yaml
   task-service-deployment.yaml
   telerik-reports-deployment.yaml
   tenant-admin-deployment.yaml
   tenant-api-deployment.yaml
   workflow-deployment.yaml
-pvc**
   mssql-persistent-volume-claim.yaml
-routes
   naxdev-local-route.yaml
   wildcard-naxdev-local-route.yaml
-scc
   scc.yaml
-scripts
   —syncfusion-api
        custom-entrypoint.sh*
    -telerik-reports
        custom-entrypoint.sh*
-secrets
   —api
        appsettings-custom.json*
    -auth
    -tenant-api
        appsettings-custom.json
-services
   admin-service.yaml
   api-service.yaml
   auth-service.yaml
```

documentation-service.yaml
front-service.yaml
mobile-api-service.yaml
nginx-service.yaml
public-api-service.yaml
syncfusion-api-service.yaml
task-service-service.yaml
telerik-reports-service.yaml
tenant-admin-service.yaml
workflow-service.yaml

* pliki opcjonalne z niestandardowymi ustawieniami konfiguracyjnymi

** folder *PVC* (Persistent Volume Claim) jest potrzebny do zapisu danych z instancji serwera SQL uruchamianej w kontenerze (*mssql*). W przypadku korzystania z innej instancji ten folder nie jest potrzebny, a w procedurze można pominąć kroki 11, 12 i 13.

3. Uruchom konsolę Openshift w przeglądarce, pod adresem URL <u>https://console-openshift-console.apps-crc.testing/</u>. Zostanie wyświetlona następująca strona:

≡ okd							<u>ب</u>	0 O	kubeadmin 🗸
📽 Administrator		Overview							
Home		Cluster							
Operators									
Workloads		Getting started resources ③							
Networking		ed Build with guided documentation Follow guided documentation to build applications and f	set Build with guided documentation Follow guided documentation to build applications and familiarize yourself with key features.				Explore new admin features Explore new features and resources within the admin perspective.		
Storage	>	Monitor your sample application → Get started with Quarkus using a Helm Chart →			API Explorer → OperatorHub → See what's new in OpenShift 4.12 (2*				
Builds									
Observe									
Compute	>	Details View settings Cluster API address	Status	Control Pl	lane 🔗 Operators		Activity		View events
User Management		https://api.crc.testing:6443 Cluster ID		🕑 Dynamic P					ities.
Administration	>	352b4697-6670-4897-983a- 36c784aeaac7	- issues pending				Recent even	s	Pause
		Infrastructure provider Libvirt		G			- (8	Received sig	nal to ter >

4. Utwórz nowy projekt:

			OpenShift Local	cluster is for development an	testing purposes. DON'T use	e it for production.			
≡ okd								🐥 🗘 😧 ku	beadmin -
🌣 Administrator		Projects						Crea	te Project
Home	~ `	▼ Filter ▼ Name							
Overview									
Projects		Name	Display name 📫	Status 📫	Requester 📫	Memory 1	CPU 🏌	Created	
Projects Search		Name 1 PR default	Display name 1	Status 🕴	Requester 1	Memory 1	CPU ‡	Created 1 1 mar 2023, 08:17	:
Projects Search API Explorer Events		Name 1 PR default PR hostpath- provisioner	Display name 1 No display name No display name	Status 1 Active Active Active	Requester 1 No requester No requester	Memory 1 - -	CPU ‡ - -	Created 1 mar 2023, 08:17	: :
Projects Search API Explorer Events		Name PR default PR hostpath- provisioner PR kube-node-lease	Display name 1 No display name No display name No display name	Status 1 O Active O Active O Active	Requester No requester No requester No requester	Memory 1 - -	CPU 1:	Created 1 mar 2023, 08:17 2 mar 2023, 09:01 1 mar 2023, 08:16	: : :

Nadaj mu dowolną nazwę, na przykład *nAxiom*, i kliknij przycisk Create.

			🐥 🤁 😯 kubeadi
	Create Project		
Projects	An OpenShift project is an alternative representation of a Kubernetes namespace.		
	Learn more about working with projects 🗗		
▼ Filter ▼ Name ▼ Sea	Name 💿		
Name Display	naxiom	CPU 🗘	Created 🗘
PR default No displ	Display name		🚱 1 mar 2023, 08:17 🕴
PR hostpath- No displ	nAxiom		😵 2 mar 2023, 09:01 🚦
provisioner	Description		
PR kube-node-lease No displ			🚱 1 mar 2023, 08:16 🕴
PR kube-public No displ			🚱 1 mar 2023, 08:16
PR kube-system No displ			🚱 1 mar 2023, 08:16 🔹
PR openshift No displ	Cancel		🚱 1 mar 2023, 08:25
			A 1 2022 00.22

5. Wczytaj obrazy do rejestru lokalnego (do nowej przestrzeni nazw naxiom).

- 6. (Wymagane uprawnienia administratora). Uruchom terminal i wpisz:
- oc edit scc anyuid

znajdź sekcję *runAsUser* i dodaj następujące linie:



7. Wczytaj obiekty *SecurityContextConstraints*. W tym celu uruchom następujące polecenie, aby wczytać plik *scc.yaml* do platformy OpenShift (wymagane uprawnienia administratora):

```
oc create -f ./scc/scc.yaml -n naxiom
oc adm policy add-scc-to-user run-as-root -z default -n naxiom
```

Ten plik powinien mieć następującą zawartość:

```
apiVersion: security.openshift.io/v1
kind: SecurityContextConstraints
metadata:
    name: run-as-root
    allowPrivilegedContainer: false
runAsUser:
    type: RunAsAny
    uidRangeMax: 1000709999
    uidRangeMin: 0
seLinuxContext:
    type: MustRunAs
fsGroup:
```

type: MustRunAs
supplementalGroups:
type: RunAsAny

8. Jeśli nie masz certyfikatów, wygeneruj je, na przykład używając polecenia openss1 dla środowiska lokalnego. Można także użyć programu letsencrypt lub innego płatnego urzędu certyfikacji. Szczegóły dotyczące certyfikatów opisano w osobnym artykule Wdrożenie nAxiom z obrazów Docker. Następnie uUtwórz obiekty *tls secret* dla certyfikatów. Trzeba to zrobić z terminala, ponieważ interfejs przeglądarkowy nie ma takiej opcji. Uruchom następujące polecenia:

```
oc create secret tls cert-naxiom-internal --cert=./certs/o7t-internal.crt
    --key=./certs/o7t-internal.key -n naxiom
oc create secret tls cert-naxiom-proxy --cert=./certs/proxy-cert.crt
    --key=./certs/proxy-cert.key -n naxiom
```

9. Teraz utwórz niezbędne obiekty wdrożenia. Można do tego użyć poleceń terminala oc lub interfejsu przeglądarkowego.

Najpierw utwórz obiekt *secret* wymagany do uruchomienia aplikacji (plik *appsettings-custom.json* dla serwisu *tenant-api* z parametrami połączenia z bazą danych). Z menu Workloads z lewej strony wybierz pozycję Secrets, kliknij przycisk Create i wybierz key/value secret. W wyświetlone pola wpisz wartości jak na ilustracji (wskaż plik *appsettings-custom.json* dla serwisu *tenant-api*).

Uwaga: pamiętaj, aby tworzyć obiekty *secret* i inne w przestrzeni nazw swojego projektu (w tym opisie *naxiom*).

🌣 Administrator	.	Project: naxiom 👻		
Home	>	Create key/value secret		
		Key/value secrets let you inject sensitive data into your application as files or environment var	ables.	
Operators	>	Secret name *		
Workloads	~	tenant-api-config		
THEIRICULE		Unique name of the new secret.		
Pods		Key *		
Deployments		appsettings-custom.json		
DeploymentConfigs		Value		
StatefulSets		appsettings-custom.json	Browse	
Secrets		Drag and drop file with your value here or browse to upload it.		
ConfigMaps		<pre>{ "ConnectionStrings": {</pre>	Ê	
CronJobs		"SQLConnectionString": "Server=mssql-service,1433;Initial		
Jobs		Add key/value		
DaemonSets				
ReplicaSets		Cancel		
ReplicationControllers				
HorizontalPodAutoscalers				

10. Utwórz obiekty *configmaps*. Jest to wymagane dla usługi *nginx*. Dla innych serwisów te obiekty nie są wymagane, o ile mają one działać w konfiguracji domyślnej zapisanej w obrazach. Serwis *nginx* używa 4 obiektów *configmap*. Można je utworzyć w konsoli. Jeden z tych obiektów jest szablonem rozwiązywanym podczas uruchamiania kontenera nginx przy użyciu polecenia *envsubst*. (Szczegóły znajdziesz we wpisie *command*, w pliku *deployment* dla serwisu nginx). Utwórz następujące obiekty *configmap*:

• nginx-naxiom:

Uwaga: ze względu na dłuższy czas przetwarzania rozbudowanych żądań zaleca się wydłużenie limitu czas dla operacji odczytu, nawiązywania połączenia i wysyłania z domyślnych 60 s na 300 s. W tym celu w konfiguracji serwera nginx należy dodać następujące wpisy:

proxy_read_timeout 300s; proxy_connect_timeout 300s; proxy_send_timeout 300s;

≡ okd			Ð	Ø	kubeadmin v
Operators 2		Project: naxiom 💌			
Workloads	·	Create ConfigMap Config maps hold key-value pairs that can be used in pods to read application configuration.			
Deployments		Configure via: Form view YAML view			
DeploymentConfigs StatefulSets	1	Name *			
Secrets		ngino-naxiom			
ConfigMaps Crop. Jobs	- 1	Immutable if set to true, ensures that data stored in the ConfigMap cannot be updated			
Jobs		Data			
DaemonSets		Data contains the configuration data that is in UTF-8 range			
ReplicaSets		Key *			
ReplicationControllers		naxiom template conf			
HorizontalPodAutoscalers PodDisruptionBudgets		Value Proven			
Networking	,	Drag and drop file with your value here or browse to upload it.			
Services		# Listen on port 443 for SSL communication			
Routes		O Add key/value			
NetworkPolicies		Binary Data ReservData creatains the binary data that is not in UTF-8 ranne			
Storage	,	O Add key/value			

• nginx-naxiom-buffers:

Operators		Project: naxiom 🔹
Workloads Pods		Create ConfigMap Config maps hold key-value pairs that can be used in pods to read application configuration.
Deployments		Configure via:
DeploymentConfigs		
StatefulSets		Name *
Secrets		nginx-naxiom-buffers
ConfigMaps		A unique name for the ConfigMap within the project
		Immutable
CronJobs		Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated
Jobs		Data
DaemonSets		Data contains the configuration data that is in UTF-8 range
ReplicaSets		Remove key/value
ReplicationControllers		Key
ReplicationControllers		naxiom-buffers conf
HorizontalPodAutoscaler	5	Value
PodDisruptionBudgets		naviom-buffers.conf Browse_
		Drag and drop file with your value here or browse to upload it.
Networking	Ť	
Services		prox_tos_outers_size size,
Routes		
Ingresses		✿ Add key/value
NetworkPolicies		Binary Data
oncies		BinaryOata contains the binary data that is not in UTF-B range
Storage		Add key/value

• nginx-naxiom-headers:

0	perators	>	•	Project: naxiom 👻		
w	orkloads Pods	~		Create ConfigMap Config maps hold key-value pairs that can be used in pods to read application configuration.		
	Deployments			Configure via: Form view YAML view		
	DeploymentConfigs					
	StatefulSets		н.	Name *		
	Secrets			nginx-naxiom-headers		
	ConfigMaps			A unique name for the ConfigMap within the project		
	CronJobs		l	Immutable Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated		
	Jobs			Data		
	DaemonSets			Data contains the configuration data that is in UTF-8 range		
	ReplicaSets				😑 Remove k	ey/value
	ReplicationControllers		I	key * naxiom-headers.conf		
	HorizontalPodAutoscalers		I	Value		
	PodDisruptionBudgets		I	naxiom-headers.conf	1	Browse
Ne	etworking	~	I	Drag and drop file with your value here or browse to upload it.		<u> </u>
	Services		I	proxy_set_header Host \$host; proxy_set_header X-Forwarded-For \$proxy_add_x_forwarded_for; 		-
	Ingresses		ľ	C Add key/value		
	- NetworkPolicies		L	Binary Data		
				BinaryData contains the binary data that is not in UTF-8 range		
St	orage	~		O Add key/value		

• nginx-naxiom-certificate:

Workloads Create ConfigMap. Pods Config maps hold key-value pairs that can be used in pods to read application configuration. Deployments Configure viz:	Operators	>		Project: naxiom 🔻		
Deployments DeploymentConfigs StatefulSets Secrets ConfigMaps ConfigMaps ConfigMaps ConfigMaps ConfigMaps ConfigMaps Data Jobs Data Data Data contains the configuration data that is in UTF-8 range Performation Performation ReplicaSets ReplicaSets ReplicaSets PodDisruptionBudgets Nation-certificate conf Drag and drop file with your value here or browse to upload it. # Services Routes	Workloads Pods	*		Create ConfigMap Config maps hold key-value pairs that can be used in pods to read application configuration.		
DeploymentConfigs StatefulSets Secrets ConfigMaps ConfigMaps ConJobs Jobs Jobs Data Data ontains the configuration data that is in UTF-8 range Data ontains the configuration data that is in UTF-8 range ReplicaSets ReplicaSets ReplicaSets HorizontraliPodAutoscalers PodDisruptionBudgets Networking Services Routes Orag and drop file with your value here or browse to upload it. # Set certificate for HTTPS services Routes	Deployments			Configure via: Form view YAML view		
StatefulSets Name * Secrets nginx-naxiom-certificate ConfigMaps A unique name for the ConfigMap within the project. ConJobs Immutable Jobs Data DaemonSets Data ReplicationControllers Taxiom-certificate conf HorizontalPodAutoscalers Value PodDisruptionBudgets Dag and drop file with your value here or browse to upload it. * Services Services Routes Certificate for HITPS Services ss1_certificate for HITPS Routes Certificate for HITPS	DeploymentConfigs					
Secrets Inginx-naxiom-certificate ConfigMaps A unique name for the ConfigMap within the project Cron.Jobs Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated Jobs Data DaemonSets Data contains the configuration data that is in UTF-8 range ReplicaSets Inaxiom-certificate conf HorizontalPodAutoscalers naxiom-certificate conf Value naxiom-certificate conf naxiom-certificate conf Browse Orga and drop file with your value here or browse to upload it. # set certificate for HTTPS Services s set certificate for HTTPS Routes • Add key/value	StatefulSets		ł.	Name *		
ConfigMaps A unique name for the ConfigMap within the project Cron.Jobs Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated Jobs Data DaemonSets Data ReplicaSets Data contains the configuration data that is in UTF-8 range ReplicaSets ReplicationControllers HorizontalPodAutoscalers naxiom-certificate.conf PodDisruptionBudgets Drag and drop file with your value here or browse to upload it. Services ssl_certificate for HTTPS Routes • Add key/value	Secrets		L	nginx-naxiom-certificate		
Immutable CronJobs Jobs Jobs DaemonSets ReplicaSets ReplicationControllers HorizontalPodAutoscalers PodDisruptionBudgets Networking Services Routes Routes Immutable Immutable Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated Data Data contains the configuration data that is in UTF-8 range ReplicaSets ReplicationControllers Imaxiom-certificate.conf Networking Services Routes ProdDisruptionBudgets Drag and drop file with your value here or browse to upload it. # Set certificate for HITPS ssl_certificate for HITPS ssl_certificate for det (enset) for each (enset) for	ConfigMaps		L	A unique name for the ConfigMap within the project		
CronJobs Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated Jobs Data DaemonSets Data contains the configuration data that is in UTF-8 range ReplicaSets ReplicaSets ReplicationControllers naxiom-certificate.conf HorizontalPodAutoscalers naxiom-certificate.conf PodDisruptionBudgets Drag and drop file with your value here or browse to upload it. Services Ssl_certificate for HTTPS Services ssl_certificate for HTTPS Routes Cath Key value	·			Immutable		
Jobs Data DaemonSets Data contains the configuration data that is in UTF-8 range ReplicaSets ReplicaSets ReplicationControllers naxiom-certificate.conf HorizontalPodAutoscalers naxiom-certificate.conf PodDisruptionBudgets Value Networking V Services Ssl_certificate for HTTPS Routes extertificate.conf if cert if cate in the certificate in the certif	CronJobs		L	Immutable, if set to true, ensures that data stored in the ConfigMap cannot be updated		
DaemonSets Data contrains the configuration data that is in UTF-8 range ReplicaSets ReplicationControllers ReplicationControllers naxiom-certificate.conf HorizontalPodAutoscalers naxiom-certificate conf PodDisruptionBudgets Value naxiom-certificate conf Browse Drag and drop file with your value here or browse to upload it. Services ssl_certificate for HTTPS Routes * Set certificate for HTTPS Services ssl_certificate for HTTPS Services ssl_certificate for HTTPS Services ssl_certificate for HTTPS Services ssl_certificate for HTTPS	Jobs		L	Data		
ReplicaSets Key ReplicaTionControllers naxiom-certificate.conf HorizontalPodAutoscalers Value PodDisruptionBudgets Inaxiom-certificate.conf Networking Imaxiom-certificate.conf Services Drag and drop file with your value here or browse to upload it. Routes # Set certificate for HTTPS ssl_certificate.kow cert/proxy.crt; Imaximum certificate.kow certificate.kow	DaemonSets		L	Data contains the configuration data that is in UTF-8 range		
ReplicationControllers naxiom-certificate.conf HorizontalPodAutoscalers Value PodDisruptionBudgets naxiom-certificate.conf Networking Imaxiom-certificate.conf Services Services Routes * Set certificate for HTTPS ssl_certificate cert/proxy.crt; * Add key/value *	ReplicaSets			🗢 Remo		
ReplicationControllers naxiom-certificate.conf HorizontalPodAutoscalers Value PodDisruptionBudgets naxiom-certificate.conf Networking Imaxiom-certificate.conf Services Sel certificate for HTTPS Routes ssl_certificate.kov				Key *		
HorizontalPodAutoscalers Value PodDisruptionBudgets naxiom-certificate.conf Browse Networking ✓ Services ssl_certificate for HTTPS Routes ✓ Add key/value	ReplicationControllers			naxiom-certificate.conf		
PodDisruptionBudgets naxiom-certificate.conf Browse Networking Drag and drop file with your value here or browse to upload it. Services # Set certificate for HTTPS ssl_certificate are cert/proxy.crt; Routes • Add key/value	HorizontalPodAutoscaler	s	L	Value		
Networking Compared and solution - certificate.com Browse Services Drag and drop file with your value here or browse to upload it. Routes # Set certificate for HTTPS ssl_certificate acert/proxy.crt; ** Add key/value	PodDisruptionBudgets				Descuse	
Networking Drag and drop file with your value here or browse to upload it. Bervices Routes Certificate for HTTPS Ssl_certificate cert/proxy.crt; Certificate kout Certificate kout				naxiom-certificate.cont	Browse	
Services # Set certificate for HTTPS Ssl_certificate cert/proxy.crt; Routes * Add key/value	Networking	~		Drag and drop file with your value here or browse to upload it.		
Services ssl_certificate cert/proxy.crt; Routes Contificate cert/proxy.key	riterioritang			# Set certificate for HTTPS		
Routes Add key/value	Services			ssl_certificate cert/proxy.crt;	-	
Add key/value	Routes			_ccl_contificato_koucont/ppopulkou		
				S Add key/value		

Dopilnuj, aby nazwy kluczy zostały wpisane poprawnie (tak jak na ilustracjach powyżej).

W opisywanym przykładzie wdrożenia serwis nginx jest używany w przestrzeni nazw wdrażanej witryny. Można go jednak skonfigurować do działania we osobnej przestrzeni nazw i obsługę wielu witryn nAxiom. Wymaga to jednak skonfigurowania kierowania ruchu do kilku domen.

11. Utwórz zasób PVC (persistent volume claim) dla serwisu MSSQL. Ten krok (i dwa następne) można pominąć, jeśli zamiast poda MSSQL w klastrze OpenShift ma być używana lokalna instancja SQLEXPRESS. Kliknij pozycję Persistent Volume Claim w menu Storage. Kliknij przycisk Create PersistentVolumeClaim i kliknij Edit YAML (parametry zostaną podane w pliku YAML w folderze pvc).



Wklej zawartość pliku yaml do edytora (zwróć uwagę, czy przestrzeń nazw to naxiom) i kliknij przycisk Create. Zasób PVC będzie miał status Pending, co oznacza, że jest gotowy do użycia.

Operators	>	Project: naxiom	
Workloads	*	Create PersistentVolumeClaim	
Pods		Create by manually entering YAML or JSON definitions, or by dragging and dropping a file into the editor.	
Deployments			
DeploymentConfigs		Alt + F1 Accessibility help I view shortcuts 1 kind: PersistentVolumeClaim	PersistentVolumeClaim
StatefulSets		2 apiVersion: V1 3 metadata:	
Secrets		4 name: mssql-persistent-volume-claim 5 namespace: naxiom	
ConfigMaps		6 finalizers: 7 - kubernetes.io/pvc-protection	Persistent volume Claim is a user's request for and claim to a persist volume
CronJobs		8 spec: 9 accessModes:	apiVersion
Jobs		10 - ReadWriteOnce 11 resources:	string APIVersion defines the versioned schema of this representa
DaemonSets		12 requests: 13 storage: 26i	an object. Servers should convert recognized schemas to the internal value, and may reject unrecognized values. More in
ReplicaSets		14 storageClassName: crc-csi-hostpath-provisioner 15 volumeMode: Filesystem	https://git.k8s.io/community/contributors/devel/sig-
ReplicationController		16	
HorizontalPodAutosc	alers		• kind
PodDisruptionBudget	s		string Kind is a string value representing the REST resource this o
Networking	~		represents. Servers may infer this from the endpoint the cli
Caprices			https://git.k8s.io/community/contributors/devel/sig- architecture/api-conventions.md#types-kinds

12. Utwórz obiekty deployment i service. Najpierw dla serwisu mssql. Kliknij pozycję Deployments, kliknij przycisk Create i zaznacz opcję YAML view.

≡ okd			
Operators	>		
Workloads Pods	*		Create Deployment
Deployments			Configure via: Form view
DeploymentConfigs			
StatefulSets		н.	1 Note: Some fields may not be represented in this form view. Please select "YAML view" for full control.
Secrets			Name *
ConfigMaps			
CronJobs		L	Deployment strategy
Jobs			

Wklej zawartość pliku *mssql-deployment* i kliknij przycisk Create.

Workloads	~	Create Deployment	
Pods			
Deployments		Configure via: O Form view O YAML view	
DeploymentConfigs		Alt + F1 Accessibility help 😯 View shortcuts	Depl
StatefulSets	- 1	1 kind: Deployment 2 apiversion: apps/v1	Bebr
Secrets	- 1	3 metadata:	Schem
ConfigMaps	- 1	5 namespace: naxiom	Deploy
CronJobs	- 1	7 replicas: 1 8 selector:	
Jobs	- 1	9 matchLabels: 10 app: mssgl	
DaemonSets	- 1	11 template: 12 metadata:	
ReplicaSets	- 1	13 labels: 14 app: mssql	
ReplicationControllers		15 spec: 16 containers:	
HorizontalPodAutoscalers		17 - name: mssql 18 image: mcr.microsoft.com/mssgl/server:2019-latest	•

Zostanie wyświetlony pulpit wdrożenia. Poczekaj aż system pobierze obraz z repozytorium mssql. Kiedy wdrożenie będzie gotowe do uruchomienia, zostanie wyświetlony niebieski okrąg:



13. Utwórz obiekt *service* dla poda *mssql*, aby umożliwić komunikację z innymi podami. Kliknij pozycję Services w menu Networking i wklej zawartość pliku *mssql-service.yaml*.

Operators	>	^	Project: naxiom 👻		
Workloads	*		Create Service		
Pods			Create by manually entering YAML or JSON definitions, or by dragging and dropping a file into th	e editor.	
Deployments					
DeploymentConfigs			Alt + F1 /	Accessibility help 😯 View shortcuts	Service
StatefulSets		1	2 apiversion: v1		Schema
Secrets			4 name: mssql-service		
ConfigMaps			6 spec:		Service is a named abstraction of software service (for example, mys consisting of local port (for example 3306) that the proxy listens on
CronJobs			8 app: mssql		selector that determines which pods will answer requests sent throug
Jobs			10 - protocol: TCP		pioxy.
DaemonSets			12 targetPort: 1433	•	string
ReplicaSets			14		APIVersion defines the versioned schema of this representat an object. Servers should convert recognized schemas to the
ReplicationControllers					internal value, and may reject unrecognized values. More info https://git.k8s.io/community/contributors/devel/sig-
HorizontalPodAutoscale	rs				
PodDisruptionBudgets					
		-1			string
Networking	*				Kind is a string value representing the REST resource this obj
Services					submits requests to. Cannot be updated. In CamelCase. More
Deuter					nttps://git.k8s.io/community/contributors/devel/sig-

14. Utwórz obiekty deployment i service dla serwisu nginx w analogiczny sposób jak w krokach 12 i 13.



15. Utwórz obiekty *route*, które będą odpowiadać za kierowanie ruchu do serwisu nginx. Kliknij pozycję Routes w menu Networking, kliknij przycisk Create Route i zaznacz opcję YAML view.

CronJobs	^	Project: naxiom -	
Jobs DaemonSets		Create Route Routing is a way to make your application publicly visible.	
ReplicaSets		Configure via: O Form view SYAML view	
HorizontalPodAutoscalers PodDisruptionBudgets		Alt + F1 Accessibility help ? V 1 kind: Route 2 apiVersion: route.openshift.io/v1	Fiew shortcuts
Networking Services	~	4 name: naxdev.local-route 5 namespace: naxiom 6 spec: 7 host: naxdev.local 8 to:	A route allows developers to expose se load balancing and proxy layer via a put further specify TLS options and a certi
Routes Ingresses NetworkPolicies	1	9 kind: Service 10 name: nginx-service 11 weight: 100 12 port: 13 targetPort: 443	that the router should also accept for H administrator typically configures their cluster firewall, and may also add additi controls on the service content. Router endpoints.
Storage PersistentVolumes PersistentVolumeClaims	~	14 CLS: 15 termination: passthrough 16 insecureEdgeTerminationPolicy: Redirect 17 wildcardPolicy: None 18	Once a route is created, the `host` fiel routers use the oldest route with a give Routers are subject to additional custo controls via the annotations field.

Dodaj dwa obiekty *route* zdefiniowane w plikach w folderze *routes*: jeden dla domeny i jeden z obsługą poddomen (wymaganą do obsługi wielu tenantów).

16. Sprawdź, czy domena *naxdev.local* jest dostępna w przeglądarce (certyfikaty samopodpisane nie będą działać w przeglądarce Firefox, która korzysta z własnego magazynu certyfikatów). Błąd 502 jak na ilustracji poniżej oznacza, że serwis nginx działa, należy tylko utworzyć obiekty *deployment* i *service* dla serwisów nAxiom. Wystąpienie innego błędu będzie oznaczało, że ruch nie dociera do serwisu nginx.

← C 🗈 https://naxdev.local		
	502 Bad Gateway	
	nginx/1.25.0	

17. Utwórz obiekty *deployment* i *service* dla serwisów *tenant-api* i *tenant-admin* analogicznie jak dla serwisów *mssql* i *nginx*. Aby sprawdzić, czy konfiguracja w pliku *tenant-api-deployment* jest poprawna, kliknij zakładkę Pods:

Deployments > Deployment details Tenant-api-deployment							
_ Details Metrics YAML ReplicaSets Pods	Environment	t Events					
▼ Filter ▼ Name ▼ Search by name							
Name † Status ‡	Ready 🗍	Restarts 🗍	Owner 🔱	Memory 🗍	CPU 1	Created 1	
P tenant-api-deployment- 55c:868796f-fbx2j	1/1		RS) tenant-api-deployment- 55c868796f			30 maj 2023 12:20	

Kliknij oznaczony pod, a następnie kliknij zakładkę Logs, jak na ilustracji poniżej:

🌣 Administrator		Project: naxiom 🔹	
Home	>	Pods > Pod details	
			tions 👻
Operators	>	Details Metrics YAML Environment Logs Events Terminal	
Workloads			
Pods			
Deployments		34 lines	
DeploymentConfigs StatefulSets Secrets ConfigMaps CronJobs Jobs DaemonSets ReplicaSets HorizontalPodAutoscalers PodDisruptionBudgets		2 Creating listemer for file '/tmp/certificate.key'. 3 wto. 30 maj 2023, 10:21:04 UTC: Time of the file access '/tmp/certificate.key' was not changed, retry no: 1. 4 Trying to copy secret file to "/home/app/appsettings-custom.json". 5 Creating listemer for file '/home/app/appsettings-custom.json". 6 wto. 30 maj 2023, 10:21:02 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 1. 7 wto. 30 maj 2023, 10:21:03 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 2. 8 wto. 30 maj 2023, 10:21:04 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 2. 9 Updating certificates 10 Updating certificates 11 wto. 30 maj 2023, 10:21:04 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 3. 12 wto. 30 maj 2023, 10:21:04 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 4. 13 wto. 30 maj 2023, 10:21:06 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 4. 14 wto. 30 maj 2023, 10:21:06 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 4. 14 wto. 30 maj 2023, 10:21:06 UTC: Time of the file access '/home/app/appsettings-custom.json" was not changed, retry no: 4.	ĥ
Networking	>	24 { "MachineHame": "tenant-api-deployment-55:6867967-fbb2]; "Logger": "Program", "Loggered": "INTO", "Timestamp": "2023-65-30 10:21:07.8408", "Message": "Tenant Admin AP vto, 30 maj 2023, 10:21:08 UTC: Time of the file access "/home/app/appstelings-custom.json" changed, removing from disk. vto, 30 maj 2023, 10:21:08 UTC: Time of the file access "/home/app/appstelings-custom.json" changed, removing from disk.	I startir
Storage	>	27 wto, 30 maj 2023, 10:21:10 UTC: Time of the file access "/tmp/certificate.key" mas not changed, retry no: 8. 28 wto, 30 maj 2023, 10:21:11 UTC: Time of the file access "/tmp/certificate.key" mas not changed, retry no: 9. 29 wto, 30 maj 2023, 10:21:11 UTC: Time of the file access "/tmp/certificate.key" mas not changed, retry no: 10.	
Builds	>	30 wto, 30 mbj 2023, 10:2112 OTC: Time of the file access / tmp/certificate.key' mas not changed, retry no: 11. 31 wto, 30 mbj 2023, 10:2112 DTC: Time of the file access / tmp/certificate.key' mas not changed, retry no: 12. 42 ("MachineMame": "ternant-api-deployment-55:6667967 fbx2], "togger": "TernantAdmin.Infrastructure.Services.FirstFenantInitializer", "LogLevel": "TMFO", "Timestamp": "202 57 ("MachineMame": "ternant-api-deployment-55:6667967 fbx2], "togger": "TernantAdmin.Infrastructure.Services.FirstFenantInitializer", "LogLevel": "TMFO", "Timestamp": "202	3-05-30 1
Observe	>	33 { WachineName : 'tenant-api-deployment-55050807901-Tbx2], 'Logger': 'TenantAdmin.Infrastructure.Services.FirstTenantInitializer', 'LogLevel': 'WANN', 'Timestamp': '202 34 wto, 30 maj 2023, 10:21:14 UTC: Time of the file access "/tmp/certificate.key" changed, removing from disk.	3-05-30 1
Compute			

nAxiom w Openshift...

Jeśli log zawiera wpis oznaczony na ilustracji, serwis tenant-api działa prawidłowo.

18. Wpisz w przeglądarce adres https://naxdev.local/tenatnsadmin. Powinna zostać wyświetla strona logowania do serwisu tenant-admin:

DEVELOPMENT ENVIRONMENT Log In Login here using your username and password	DEVELOPMENT ENVIRONMENT
Log In Login here using your username and password	Log In Login here using your username and password

Zaloguj się i utwórz pierwszego tenanta.

19. Utwórz obiekty deployment i service dla pozostałych serwisów nAxiom. Następnie sprawdź, czy pod adresem https://naxdev.local jest dostępna witryna nAxiom. Jeśli cały proces przebiegł poprawnie, zostanie wyświetlona strona logowania.

nAxio	m	
ŚRODOWISKO DEWELO	PERSKIE	
Logowanie Zaloguj się do swojego konta v	y systemie	
Nazwa użytkownika	8	
Hasło	ð	
Zapomnialeś hasła?	Zaloguj się	

Zależnie od liczby dodanych tenantów uruchomienie serwisu api może potrwać kilka minut. Podobnie jak w przypadku serwisu tenant-api, znakiem powodzenie będzie obecność wpisu oznaczonego na ilustracji w logu poda:

wto, 30 maj 2023, 10:37:01 UTC: Time of the file access "/tmp/certificate.key" was not changed, retry no: 132. wto, 30 maj 2023, 10:37:02 UTC: Time of the file access "/tmp/certificate.key" was not changed, retry no: 133. wto, 30 maj 2023, 10:37:03 UTC: Time of the file access "/tmp/certificate.key" was not changed, retry no: 134. Hosting environment: Production Content root path: /home/app Now listening on: https://0.0.0.0:5103 Application started. Press Ctrl+C to shut down. wto, 30 maj 2023, 10:37:04 UTC: Time of the file access "/tmp/certificate.key" changed, removing from disk.

- 154 155 156 157 158 159 160