

第

8

节

## 监控Petclinic微服务指标

# 本课内容

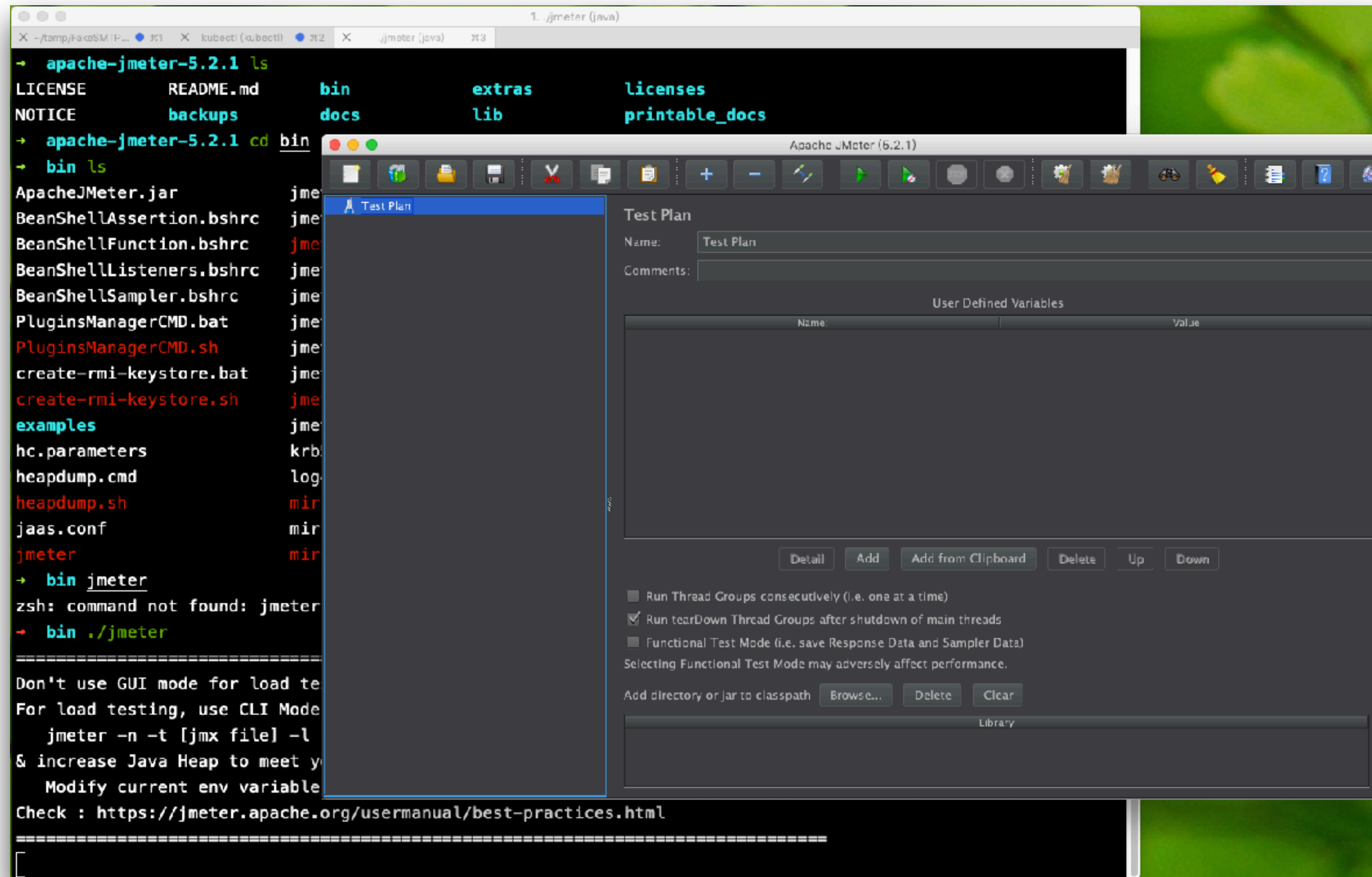
- 监控Petclinic微服务的应用和业务指标
  1. 安装JMeter压测工具
  2. 发布Petclinic微服务
  3. Review ServiceMonitor资源配置
  4. Helm upgrade promethues-operator
  5. 校验serviceMonitor配置生效
  6. 发布petclinic-msa-dashboard configmap
  7. 启动grafana UI监控petclinic微服务指标
  8. 启动JMeter对Petclinic微服务进行压测



# 安装JMeter压测工具

<https://jmeter-plugins.org/install/Install/>

[http://jmeter.apache.org/download\\_jmeter.cgi](http://jmeter.apache.org/download_jmeter.cgi)



# 发布petclinic微服务

```
1. william@jskill: ~/mydev/github/spring2go/spring-petclinic-msa/k8s/local (zsh)
X ..msa/k8s/local (zsh) %1 X kubectl (kubectl) %2 X ./jmeter (java) %3
→ local git:(master) x pwd
/Users/william/mydev/github/spring2go/spring-petclinic-msa/k8s/local
→ local git:(master) x ls
customers-svc.yml gateway-svc.yml ingress vets-svc.yml visits-svc.yml web-app.yml
→ local git:(master) x kubectl apply -f .
deployment.apps/customers unchanged
service/customers unchanged
deployment.apps/gateway unchanged
service/gateway unchanged
deployment.apps/vets unchanged
service/vets unchanged
deployment.apps/visits unchanged
service/visits unchanged
deployment.apps/web unchanged
service/web unchanged
→ local git:(master) x kubectl get po
NAME                                READY   STATUS    RESTARTS   AGE
customers-5468b6f54f-w9vcf          1/1     Running   2           2d2h
gateway-cf658f568-9km55             1/1     Running   2           2d2h
vets-fd6d6c964-n2l4s                1/1     Running   2           2d2h
visits-58d7dbf5cd-grljb             1/1     Running   2           2d2h
web-7bc7767bbb-dmnvp                1/1     Running   2           2d2h
→ local git:(master) x
```



# 校验petclinic微服务发布成功

1. william@jskill: ~/mydev/github/spring2go/spring-petclinic-msa/k8s/local (zsh)

..msa/k8s/local (zsh) 881

kubectl (kubectl) 882

./jmeter (java) 883



→ local git:(master) x minikube service list

NAMESPACE	NAME	TARGET PORT	URL
default	customers	No node port	
default	gateway	http://192.168.64.10:31080	
default	kubernetes	No node port	
default	vets	No node port	

PetClinic :: a Microservices & D


+



← → ↻ ⓘ 不安全 | 192.168.64.10:31080/#!/welcome

spring

HOMEOWNERS -VETERINARIANS

Welcome to Petclinic - Microservices Version



spring

# ServiceMonitor config for petclinic

```
! gateway-svc.yml > apiVersion
29 ---
30 apiVersion: v1
31 kind: Service
32 metadata:
33   name: gateway
34   labels:
35     svc: gateway
36 spec:
37   selector:
38     app: gateway
39   ports:
40     - name: http
41       port: 8080
42       targetPort: 8080
43       nodePort: 31080
44   type: NodePort
45
```

```
1 prometheus:
2   additionalServiceMonitors:
3     - name: "petclinic-gateway"
4       selector:
5         matchLabels:
6           svc: gateway
7       namespaceSelector:
8         matchNames:
9           - default
10      endpoints:
11        - port: http
12          path: /actuator/prometheus
13          scheme: http
14     - name: "petclinic-customers"
15       selector:
16         matchLabels:
17           svc: customers
18       namespaceSelector:
19         matchNames:
20           - default
21      endpoints:
22        - port: http
23          path: /actuator/prometheus
24          scheme: http
25     - name: "petclinic-vets"
26       selector:
27         matchLabels:
28           svc: vets
29       namespaceSelector:
30         matchNames:
31           - default
32      endpoints:
```

<https://github.com/helm/charts/blob/master/stable/prometheus-operator/values.yaml>



# 更新prometheus-operator release

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch08/07 (zsh)
X ..ction/ch08/07 (zsh) %1 X kubectl (kubectl) %2 X ./jmeter (java) %3
→ 07 git:(master) x pwd
/Users/william/csdn/k8s-msa-in-action/ch08/07
→ 07 git:(master) x ls
petclinic_msa_dashboard_config.yml values_alertmanager.yml values_servicemonitor.yml
→ 07 git:(master) x helm upgrade prometheus-operator stable/prometheus-operator --values=values_servicemonitor.yml -n monitoring
manifest_sorter.go:175: info: skipping unknown hook: "crd-install"
manifest_sorter.go:175: info: skipping unknown hook: "crd-install"
manifest_sorter.go:175: info: skipping unknown hook: "crd-install"
manifest_sorter.go:175: info: skipping unknown hook: "crd-install"
manifest_sorter.go:175: info: skipping unknown hook: "crd-install"
Release "prometheus-operator" has been upgraded. Happy Helming!
NAME: prometheus-operator
LAST DEPLOYED: Mon Feb 10 14:39:52 2020
NAMESPACE: monitoring
STATUS: deployed
REVISION: 3
NOTES:
The Prometheus Operator has been installed. Check its status by running:
  kubectl --namespace monitoring get pods -l "release=prometheus-operator"

Visit https://github.com/coreos/prometheus-operator for instructions on how
to create & configure Alertmanager and Prometheus instances using the Operator.
→ 07 git:(master) x helm history prometheus-operator -n monitoring
REVISION      UPDATED              STATUS      CHART              APP VERSION  DESCRIPTION
1             Sun Feb  9 20:21:48 2020      superseded  prometheus-operator-8.7.0  0.35.0      Install complete
2             Mon Feb 10 11:12:21 2020      superseded  prometheus-operator-8.7.0  0.35.0      Upgrade complete
3             Mon Feb 10 14:39:52 2020      deployed   prometheus-operator-8.7.0  0.35.0      Upgrade complete
→ 07 git:(master) x
```

# 校验ServiceMonitor生效

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch08/07 (zsh)
...ction/ch08/07 (zsh) 91 x kubectl (kubectl) 92 x ./meter (java) 93
→ 07 git:(master) x kubectl get servicemonitors -n monitoring
NAME                                     AGE
petclinic-customers                     77s
petclinic-gateway                       77s
petclinic-vets                          77s
petclinic-visits                       77s
prometheus-operator-alertmanager        18h
prometheus-operator-apiserver           18h
prometheus-operator-coredns            18h
prometheus-operator-grafana            18h
prometheus-operator-kube-controller-manager 18h
prometheus-operator-kube-etcd          18h
prometheus-operator-kube-proxy         18h
prometheus-operator-kube-scheduler     18h
prometheus-operator-kube-state-metrics 18h
prometheus-operator-kubelet            18h
prometheus-operator-node-exporter      18h
prometheus-operator-operator           18h
prometheus-operator-prometheus         18h
→ 07 git:(master) x
```

Prometheus Time Series Collector

localhost:9090/targets

Prometheus Alerts Graph Status Help

Targets

All Unhealthy

monitoring/petclinic-customers/0 (1/1 up) show less

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://172.17.0.6:8080/actuator/prometheus	UP	endpoint="http" instance="172.17.0.6:8080" job="customers" namespace="default" pod="customers-5468b6f54f-w8vcl" service="customers"	18.496s ago	9.267ms	

monitoring/petclinic-gateway/0 (1/1 up) show less

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://172.17.0.2:8080/actuator/prometheus	UP	endpoint="http" instance="172.17.0.2:8080" job="gateway" namespace="default" pod="gateway-c1638f588-9km55" service="gateway"	28.825s ago	12.8ms	

monitoring/petclinic-vets/0 (1/1 up) show less

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://172.17.0.4:8080/actuator/prometheus	UP	endpoint="http" instance="172.17.0.4:8080" job="vets" namespace="default" pod="vets-fd6d6c964-n2l4s" service="vets"	27.34s ago	10.33ms	

monitoring/petclinic-visits/0 (1/1 up) show less

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://172.17.0.3:8080/actuator/prometheus	UP	endpoint="http" instance="172.17.0.3:8080" job="visits" namespace="default" pod="visits-59d7dbf5cd-grlj5" service="visits"	4.937s ago	8.288ms	

monitoring/prometheus-operator-alertmanager/0 (1/1 up) show less

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
----------	-------	--------	-------------	-----------------	-------

localhost:9090/targets



# Grafana dashboard存在哪里？

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch08/07 (zsh)
→ 07 git:(master) x kubectl get configmap --selector grafana_dashboard=1 -n monitoring
```

NAME	DATA	AGE
petclinic-msa-dashboard	1	2d
prometheus-operator-apiserver	1	18h
prometheus-operator-cluster-total	1	18h
prometheus-operator-controller-manager	1	18h
prometheus-operator-etcd	1	18h
prometheus-operator-k8s-coredns	1	18h
prometheus-operator-k8s-resources-cluster	1	18h
prometheus-operator-k8s-resources-namespace	1	18h
prometheus-operator-k8s-resources-node	1	18h
prometheus-operator-k8s-resources-pod	1	18h
prometheus-operator-k8s-resources-workload	1	18h
prometheus-operator-k8s-resources-workloads-namespace	1	18h
prometheus-operator-kubelet	1	18h
prometheus-operator-namespace-by-pod	1	18h
prometheus-operator-namespace-by-workload	1	18h
prometheus-operator-node-cluster-rsrc-use	1	18h
prometheus-operator-node-rsrc-use	1	18h
prometheus-operator-nodes	1	18h
prometheus-operator-persistentvolumesusage	1	18h
prometheus-operator-pod-total	1	18h
prometheus-operator-pods	1	18h
prometheus-operator-prometheus	1	18h
prometheus-operator-proxy	1	18h
prometheus-operator-scheduler	1	18h
prometheus-operator-statefulset	1	18h
prometheus-operator-workload-total	1	18h

```
→ 07 git:(master) x
```

# petclinic-msa-dashboard ConfigMap

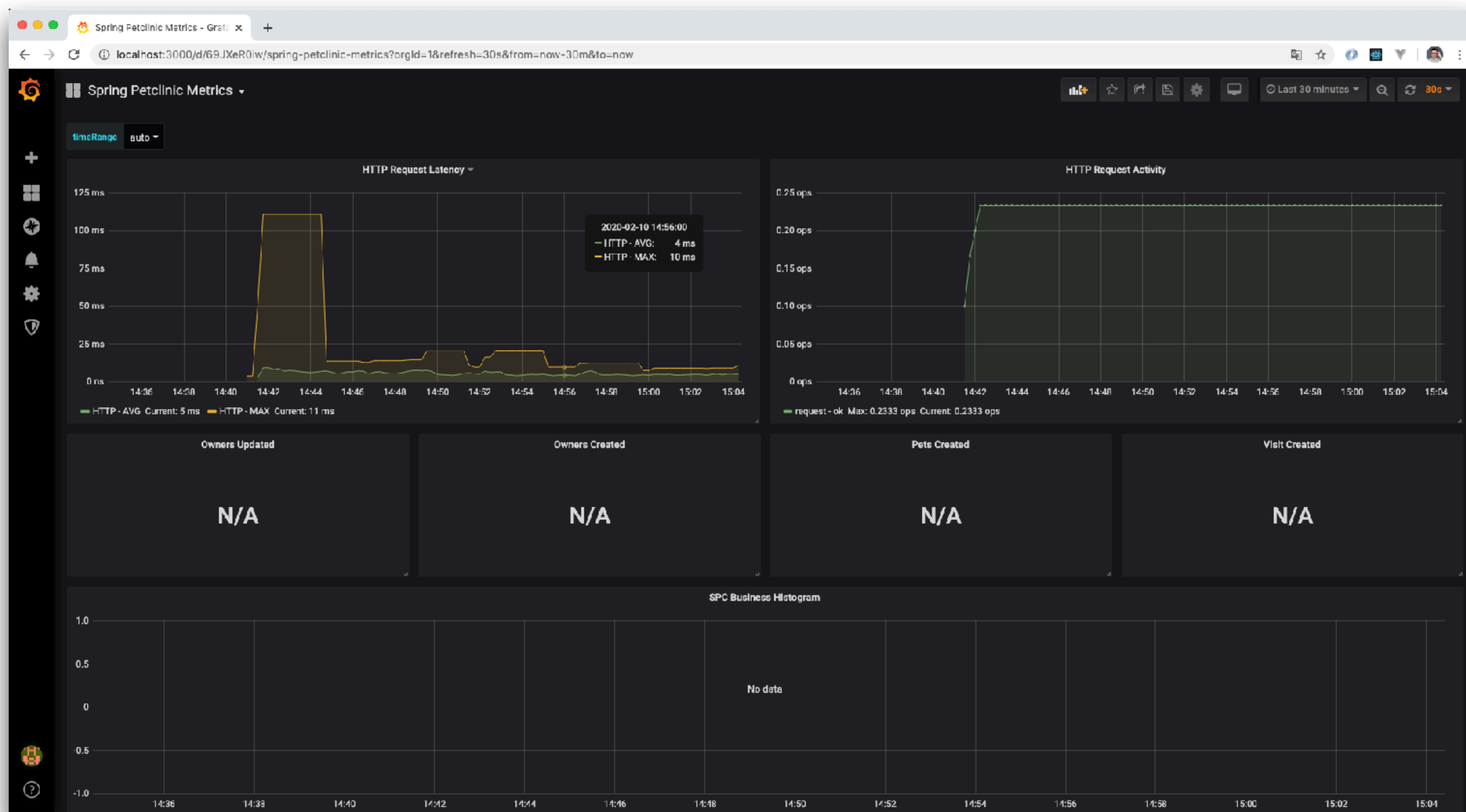
```
! petclinic_msa_dashboard_config.yml x
! petclinic_msa_dashboard_config.yml > {} data > petclinic-msa-dashboard.json
1  apiVersion: v1
2  kind: ConfigMap
3  metadata:
4    name: petclinic-msa-dashboard
5    namespace: monitoring
6    labels:
7      grafana_dashboard: "1"
8  data:
9    petclinic-msa-dashboard.json: |
10   {
11     "__requires": [],
12     "annotations": {
13       "list": [
14         {
15           "builtIn": 1,
16           "datasource": "-- Grafana --",
17           "enable": true,
18           "hide": true,
19           "iconColor": "rgba(0, 211, 255, 1)",
20           "name": "Annotations & Alerts",
21           "type": "dashboard"
22         }
23       ]
24     },
25     "editable": true,
26     "gnetId": null,
27     "graphTooltip": 0,
28     "id": null,
29     "iteration": 1539967676482,
30     "links": [],
31     "panels": [
32     {
```

# 发布petclinic-msa-dashboard ConfigMap

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch08/07 (zsh)
...ctin/ch08/07 (zsh) #1  kubectl (kubectl) #2  .jmeter (java) #3  kubectl (kubectl) #4
→ 07 git:(master) x clear
→ 07 git:(master) x pwd
/Users/william/csdn/k8s-msa-in-action/ch08/07
→ 07 git:(master) x ls
petclinic_msa_dashboard_config.yml values_alertmanager.yml          values_servicemonitor.yml
→ 07 git:(master) x kubectl apply -f petclinic_msa_dashboard_config.yml
configmap/petclinic-msa-dashboard unchanged
→ 07 git:(master) x kubectl get configmap --selector grafana_dashboard=1 -n monitoring
NAME                                DATA  AGE
petclinic-msa-dashboard             1      2d
prometheus-operator-apiserver       1      18h
prometheus-operator-cluster-total   1      18h
prometheus-operator-controller-manager 1      18h
prometheus-operator-etcd            1      18h
prometheus-operator-k8s-coredns      1      18h
prometheus-operator-k8s-resources-cluster 1      18h
prometheus-operator-k8s-resources-namespace 1      18h
prometheus-operator-k8s-resources-node 1      18h
prometheus-operator-k8s-resources-pod 1      18h
prometheus-operator-k8s-resources-workload 1      18h
prometheus-operator-k8s-resources-workloads-namespace 1      18h
prometheus-operator-kubelet          1      18h
prometheus-operator-namespace-by-pod 1      18h
prometheus-operator-namespace-by-workload 1      18h
prometheus-operator-node-cluster-rsrc-use 1      18h
prometheus-operator-node-rsrc-use    1      18h
prometheus-operator-nodes            1      18h
prometheus-operator-persistentvolumesusage 1      18h
prometheus-operator-pod-total        1      18h
```



# 启动grafana UI监控petclinic微服务指标

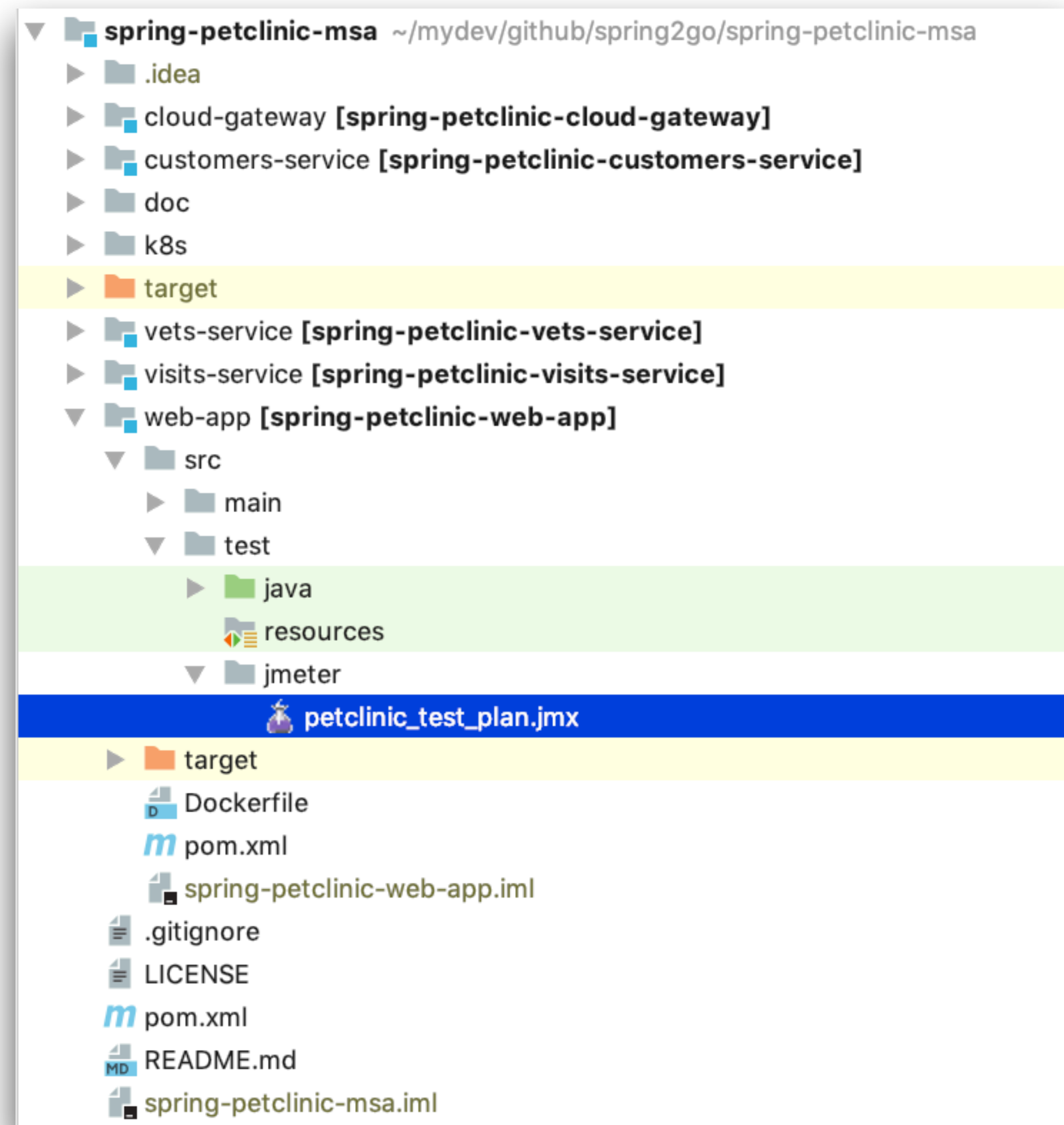
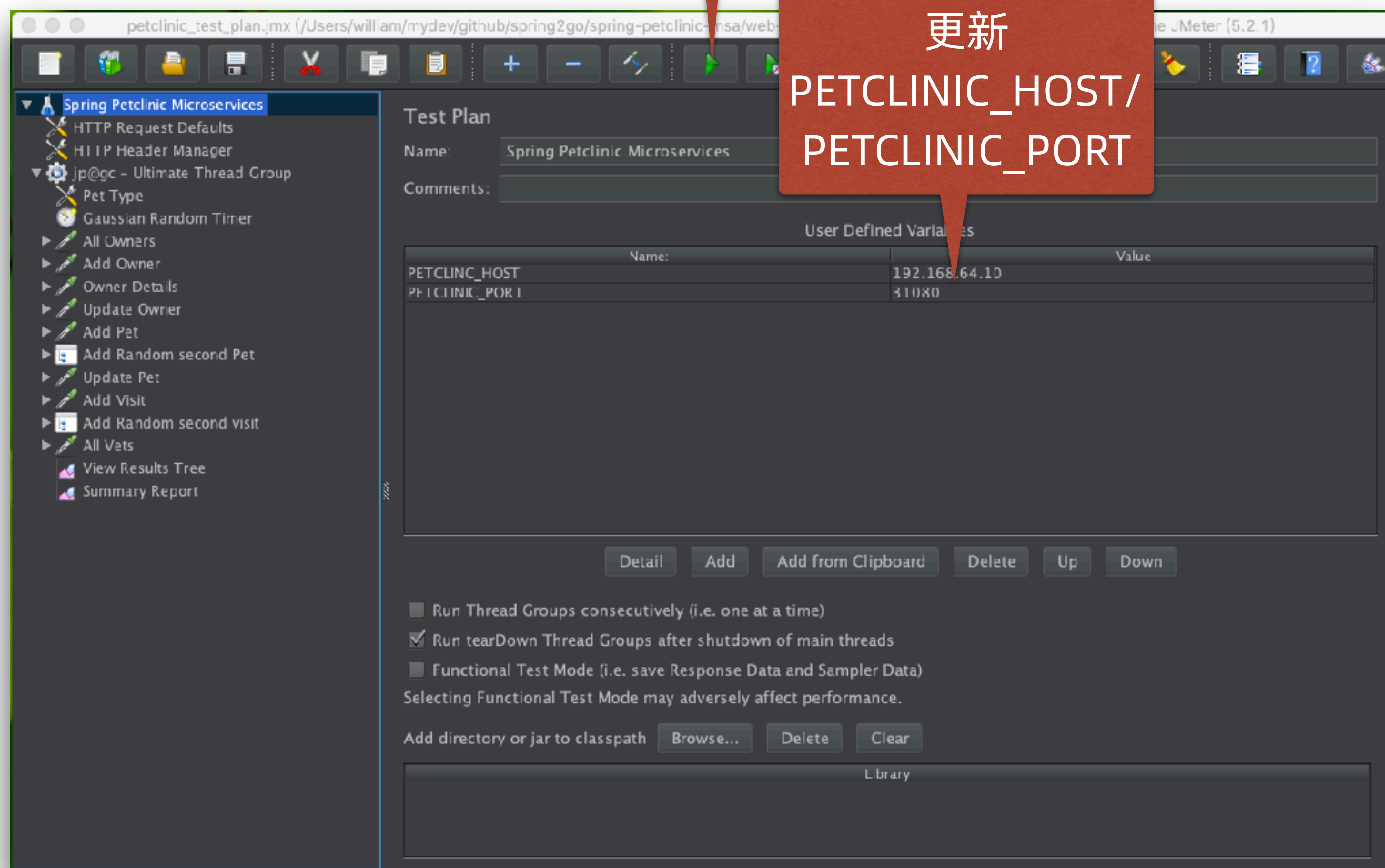


# 导入petclinic-test-plan.jmx到jmeter

## 更新配置，启动测试

运行测试

更新  
PETCLINIC\_HOST/  
PETCLINIC\_PORT



# 校验测试正确

petclinic\_test\_plan.jmx (/Users/william/mydev/github/spring2go/spring-petclinic-  
Spring Petclinic Microservices  
HTTP Request Defaults  
HTTP Header Manager  
jp@gc - Ultimate Thread Group  
Pet Type  
Gaussian Random Timer  
All Owners  
Add Owner  
Owner Details  
Update Owner  
Add Pet  
Add Random second Pet  
Update Pet  
Add Visit  
Add Random second visit  
All Vets  
View Results Tree  
Summary Report

View Results Tree

Name: View Results Tree

Comments:

Write results to file / Read from file

Filename

Search:

Text

Update Pet  
Add Owner  
Add Pet  
Add Pet  
Add Visit  
All Vets  
Add Visit  
Add Owner  
Add Visit  
Add Visit  
Add Pet  
All Owners  
Add Visit  
Update Pet  
Add Visit  
Owner Details  
All Vets  
Owner Details  
Add Visit  
Add Visit

Scroll automatically?

petclinic\_test\_plan.jmx (/Users/william/mydev/github/spring2go/spring-petclinic-  
Spring Petclinic Microservices  
HTTP Request Defaults  
HTTP Header Manager  
jp@gc - Ultimate Thread Group  
Pet Type  
Gaussian Random Timer  
All Owners  
Add Owner  
Owner Details  
Update Owner  
Add Pet  
Add Random second Pet  
Update Pet  
Add Visit  
Add Random second visit  
All Vets  
View Results Tree  
Summary Report

Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

Filename

Browse...

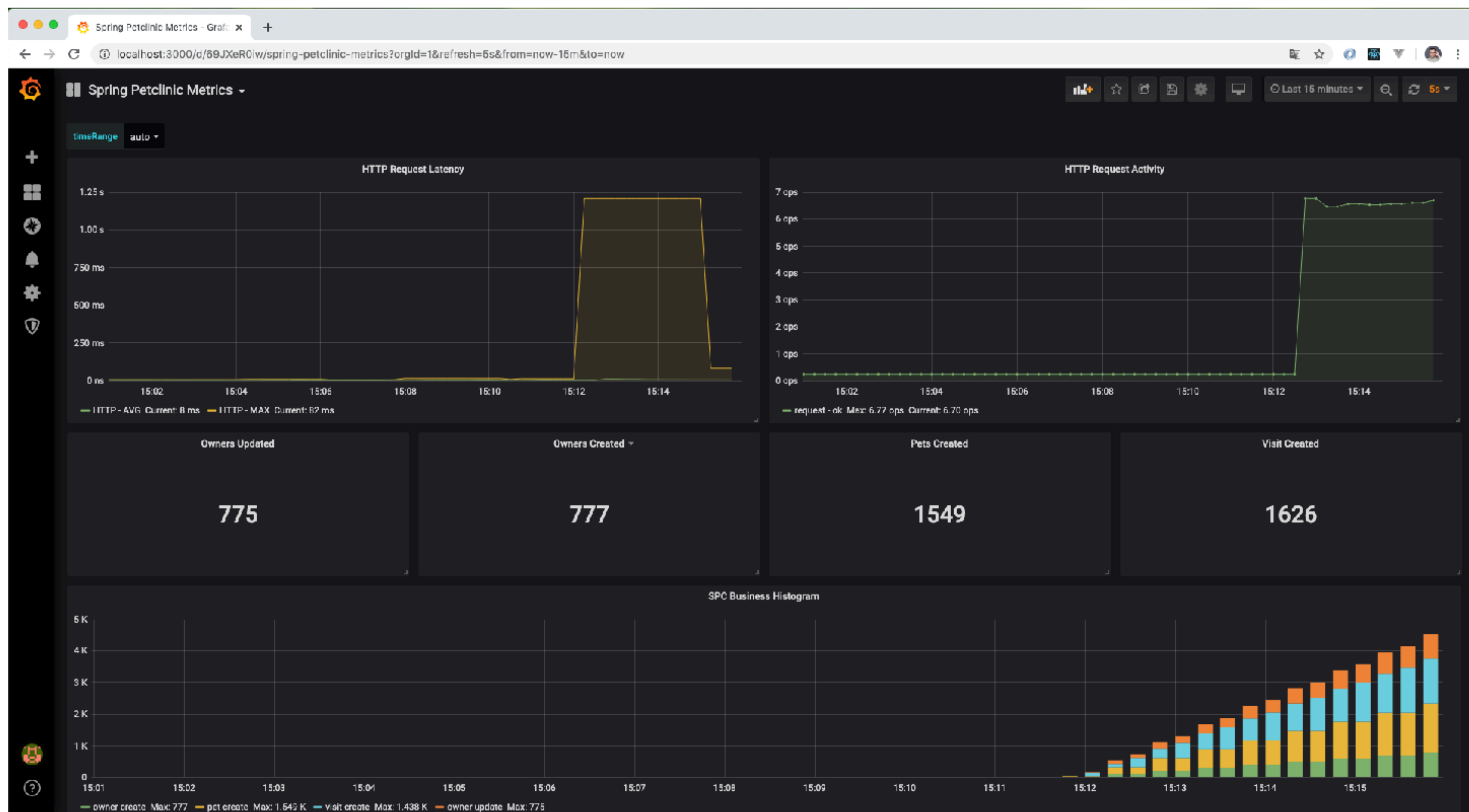
Log/Display Only: Errors Successes Configure

Label	# Samples	Average	Min	Max	Std. Dev.	Error %	Throughput	Received KB...	Sent KB/sec	Avg. Bytes
All Owners	652	43	13	518	44.16	0.00%	3.2/sec	300.96	0.84	97403.9
Add Owner	652	11	3	348	34.88	0.00%	3.2/sec	0.83	1.32	269.9
Owner De...	652	35	8	1221	128.40	0.00%	3.2/sec	0.82	0.84	264.9
Update O...	652	8	3	57	5.40	0.00%	3.2/sec	0.20	1.42	64.0
Add Pet	1299	9	3	60	5.81	0.00%	6.4/sec	1.51	2.40	242.8
Update Pet	648	8	3	54	5.54	0.00%	3.2/sec	0.20	1.27	64.0
Add Visit	1294	10	4	322	12.47	0.00%	6.4/sec	1.31	2.24	210.9
All Vets	645	14	4	470	29.84	0.00%	3.2/sec	2.48	0.82	796.0
TOTAL	6494	16	3	1221	47.41	0.00%	31.4/sec	306.67	10.99	10015.5

Include group name in label? Save Table Data Save Table Header



# 监控Grafana Dashboard指标变化



# 卸载prometheus-operator和清理环境

```
1. william@jskill: ~/csdn/k8s-msa-in-action/ch08/07 (zsh)
→ 07 git:(master) x helm uninstall prometheus-operator -n monitoring
release "prometheus-operator" uninstalled
→ 07 git:(master) x helm list -n monitoring
NAME      NAMESPACE      REVISION      UPDATED STATUS  CHART      APP VERSION
→ 07 git:(master) x kubectl get po -n monitoring
NAME                                     READY  STATUS      RESTARTS  AGE
prometheus-operator-grafana-65dc66c89d-s76pm  2/2    Terminating  2          19h
→ 07 git:(master) x kubectl get po -n monitoring
NAME                                     READY  STATUS      RESTARTS  AGE
prometheus-operator-grafana-65dc66c89d-s76pm  2/2    Terminating  2          19h
→ 07 git:(master) x kubectl get po -n monitoring
No resources found in monitoring namespace.
→ 07 git:(master) x kubectl get all -n monitoring
No resources found in monitoring namespace.
→ 07 git:(master) x kubectl get cm -n monitoring
NAME      DATA  AGE
petclinic-msa-dashboard  1      2d
→ 07 git:(master) x kubectl delete cm petclinic-msa-dashboard -n monitoring
configmap "petclinic-msa-dashboard" deleted
→ 07 git:(master) x kubectl delete ns monitoring
namespace "monitoring" deleted
→ 07 git:(master) x
```

# 本课小结



- 监控Petclinic微服务的应用和业务指标
  - 定制ServiceMonitor配置
  - helm upgrade创建ServiceMonitor资源
  - grafana dashboard存储在ConfigMap中
  - jmeter压测petclinic微服务

<https://grafana.com/>

<https://jmeter.apache.org/usermanual/index.html>