LAB-5

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Installation Part: -

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\WINDOWS\system32> choco install kubernetes-helm
Chocolatey v2.2.2
Installing the following packages:
kubernetes-helm
By installing, you accept licenses for the packages.

kubernetes-helm v3.13.3 [Approved]
kubernetes-helm package files install completed. Performing other installation steps.
The package kubernetes-helm wants to run 'chocolateyInstall.ps1'.
Note: If you don't run this script, the installation will fail.
Note: To confirm automatically next time, use '-y' or consider:
choco feature enable -n allowGlobalConfirmation
Do you want to run the script?([Y]es/[A]ll - yes to all/[N]o/[P]rint): y

Downloading kubernetes-helm 64 bit
  from 'https://get.helm.sh/helm-v3.13.3-windows-amd64.zip'
Progress: 100% - Completed download of C:\Users\dell\AppData\Local\Temp\chocolatey\kubernetes-helm\3.13.3\helm-v3.13.3-windows-amd64.zip (15.59 MB).
Download of helm-v3.13.3-windows-amd64.zip (15.59 MB) completed.
Hashes match.
Extracting C:\Users\dell\AppData\Local\Temp\chocolatey\kubernetes-helm\3.13.3\helm-v3.13.3-windows-amd64.zip to C:\ProgramData\chocolatey\lib\kubernetes-helm\tools...
C:\ProgramData\chocolatey\lib\kubernetes-helm\tools
 ShimGen has successfully created a shim for helm.exe
 The install of kubernetes-helm was successful.
  Software installed to 'C:\ProgramData\chocolatey\lib\kubernetes-helm\tools'

Chocolatey installed 1/1 packages.
 See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).

Enjoy using Chocolatey? Explore more amazing features to take your
experience to the next level at
 https://chocolatey.org/compare
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
"prometheus-community" has been added to your repositories
PS C:\WINDOWS\system32> helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "prometheus-community" chart repository
Update Complete. ⎈Happy Helming!⎈
PS C:\WINDOWS\system32> kubectl get pods
NAME                                    READY   STATUS                       RESTARTS       AGE
dapp-7dbc4b9bb5-m69c7                   1/1     Running                      2 (19m ago)    7d22h
ganache-68fcbf4785-4jbjj                0/1     Pending                      0              8d
ganache-7fc8fbfbc4-dgvb6                1/1     Running                      6 (19m ago)    9d
mongo-express-deployment-b88f6d45f-wmw4d   0/1     CreateContainerConfigError   0              15d
mongodb-stateful-set-0                  0/1     CreateContainerConfigError   0              15d
nginx-deployment-5f4f55f467-6v9dh       1/1     Running                      8 (19m ago)    15d
nginx-deployment-5f4f55f467-mbxr7       1/1     Running                      8 (19m ago)    15d
nginx-deployment-5f4f55f467-wv5rl       1/1     Running                      8 (19m ago)    15d
nginx-nvpv2                             1/1     Running                      8 (19m ago)    15d
note-deployment-74cc946cd8-2hc6d        1/1     Running                      18 (18m ago)   15d
note-deployment-74cc946cd8-88rm2        1/1     Running                      17 (18m ago)   15d
note-server-deployment-6fb5fcb67f-2qhdm   0/1     CreateContainerConfigError   0              15d
note-server-deployment-6fb5fcb67f-xncg7   0/1     CreateContainerConfigError   0              15d
react-689f46c46c-ffwht                  1/1     Running                      5 (19m ago)    9d
react-78495dbb48-hblnm                  0/1     Pending                      0              8d
web-0                                   0/1     Pending                      0              15d
```

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```
PS C:\WINDOWS\system32> helm install prometheus prometheus-community/prometheus
NAME: prometheus
LAST DEPLOYED: Tue Feb  6 01:00:35 2024
NAMESPACE: default
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
The Prometheus server can be accessed via port 80 on the following DNS name from within your cluster:
prometheus-server.default.svc.cluster.local


Get the Prometheus server URL by running these commands in the same shell:
  export POD_NAME=$(kubectl get pods --namespace default -l "app.kubernetes.io/name=prometheus,app.kubernetes.io/instance=prometheus" -o jsonpath="{.items[0].metadata.name}")
  kubectl --namespace default port-forward $POD_NAME 9090


The Prometheus alertmanager can be accessed via port 9093 on the following DNS name from within your cluster:
prometheus-alertmanager.default.svc.cluster.local


Get the Alertmanager URL by running these commands in the same shell:
  export POD_NAME=$(kubectl get pods --namespace default -l "app.kubernetes.io/name=alertmanager,app.kubernetes.io/instance=prometheus" -o jsonpath="{.items[0].metadata.name}")
  kubectl --namespace default port-forward $POD_NAME 9093
#################################################################
######   WARNING: Pod Security Policy has been disabled by default since    #####
######            it deprecated after k8s 1.25+. use                        #####
######            (index .Values "prometheus-node-exporter" "rbac"          #####
###### .          "pspEnabled") with (index .Values                         #####
######            "prometheus-node-exporter" "rbac" "pspAnnotations")       #####
######            in case you still need it.                                #####
#################################################################


The Prometheus PushGateway can be accessed via port 9091 on the following DNS name from within your cluster:
prometheus-prometheus-pushgateway.default.svc.cluster.local


Get the PushGateway URL by running these commands in the same shell:
  export POD_NAME=$(kubectl get pods --namespace default -l "app=prometheus-pushgateway,component=pushgateway" -o jsonpath="{.items[0].metadata.name}")
  kubectl --namespace default port-forward $POD_NAME 9091

For more information on running Prometheus, visit:
https://prometheus.io/
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> kubectl get pods
NAME                                          READY   STATUS                       RESTARTS       AGE
dapp-7dbc4b9bb5-m69c7                         1/1     Running                      2 (21m ago)    7d23h
ganache-68fcbf4785-4jbjj                      0/1     Pending                      0              8d
ganache-7fc8fbfbc4-dgvb6                      1/1     Running                      6 (21m ago)    9d
mongo-express-deployment-b88f6d45f-wmw4d      0/1     CreateContainerConfigError   0              15d
mongodb-stateful-set-0                        0/1     CreateContainerConfigError   0              15d
nginx-deployment-5f4f55f467-6v9dh             1/1     Running                      8 (21m ago)    15d
nginx-deployment-5f4f55f467-mbxr7             1/1     Running                      8 (21m ago)    15d
nginx-deployment-5f4f55f467-wv5rl             1/1     Running                      8 (21m ago)    15d
nginx-nvpv2                                   1/1     Running                      8 (21m ago)    15d
note-deployment-74cc946cd8-2hc6d              1/1     Running                      18 (20m ago)   15d
note-deployment-74cc946cd8-88rm2              1/1     Running                      17 (20m ago)   15d
note-server-deployment-6fb5fcb67f-2qhdm       0/1     CreateContainerConfigError   0              15d
note-server-deployment-6fb5fcb67f-xncg7       0/1     CreateContainerConfigError   0              15d
prometheus-alertmanager-0                     1/1     Running                      0              2m3s
prometheus-kube-state-metrics-745b475957-f7qdx   1/1     Running                   0              2m3s
prometheus-prometheus-node-exporter-z8spr     1/1     Running                      0              2m3s
prometheus-prometheus-pushgateway-6ccd698d79-tgvgc   1/1     Running               0              2m3s
prometheus-server-5c99dfc547-jcqx4            0/2     ContainerCreating            0              2m3s
react-689f46c46c-ffwht                        1/1     Running                      5 (21m ago)    9d
react-78495dbb48-hblnm                        0/1     Pending                      0              8d
web-0                                         0/1     Pending                      0              15d
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> kubectl get svc
NAME                                TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
dapp                                ClusterIP      10.102.68.25     <none>        4000/TCP         8d
ganache                             ClusterIP      10.106.248.20    <none>        8545/TCP         9d
kubernetes                          ClusterIP      10.96.0.1        <none>        443/TCP          15d
mongo-express-service               LoadBalancer   10.106.82.114    <pending>     8081:30648/TCP   15d
mongodb-service                     ClusterIP      10.108.145.224   <none>        27017/TCP        15d
note-server-service                 ClusterIP      10.108.249.251   <none>        5000/TCP         15d
note-service                        LoadBalancer   10.110.51.39     <pending>     3000:31125/TCP   15d
prometheus-alertmanager             ClusterIP      10.104.106.135   <none>        9093/TCP         2m43s
prometheus-alertmanager-headless    ClusterIP      None             <none>        9093/TCP         2m43s
prometheus-kube-state-metrics       ClusterIP      10.104.44.1      <none>        8080/TCP         2m43s
prometheus-prometheus-node-exporter ClusterIP      10.106.99.25     <none>        9100/TCP         2m43s
prometheus-prometheus-pushgateway   ClusterIP      10.99.177.66     <none>        9091/TCP         2m43s
prometheus-server                   ClusterIP      10.98.199.223    <none>        80/TCP           2m43s
react                               ClusterIP      10.103.40.245    <none>        3000/TCP         9d
PS C:\WINDOWS\system32>
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```
PS C:\WINDOWS\system32> kubectl get svc
NAME                                TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
dapp                                ClusterIP      10.102.68.25     <none>        4000/TCP         8d
ganache                             ClusterIP      10.106.248.20    <none>        8545/TCP         9d
kubernetes                          ClusterIP      10.96.0.1        <none>        443/TCP          15d
mongo-express-service               LoadBalancer   10.106.82.114    <pending>     8081:30648/TCP   15d
mongodb-service                     ClusterIP      10.108.145.224   <none>        27017/TCP        15d
note-server-service                 ClusterIP      10.108.249.251   <none>        5000/TCP         15d
note-service                        LoadBalancer   10.110.51.39     <pending>     3000:31125/TCP   15d
prometheus-alertmanager             ClusterIP      10.104.106.135   <none>        9093/TCP         2m43s
prometheus-alertmanager-headless    ClusterIP      None             <none>        9093/TCP         2m43s
prometheus-kube-state-metrics       ClusterIP      10.104.44.1      <none>        8080/TCP         2m43s
prometheus-prometheus-node-exporter ClusterIP      10.106.99.25     <none>        9100/TCP         2m43s
prometheus-prometheus-pushgateway   ClusterIP      10.99.177.66     <none>        9091/TCP         2m43s
prometheus-server                   ClusterIP      10.98.199.223    <none>        80/TCP           2m43s
react                               ClusterIP      10.103.40.245    <none>        3000/TCP         9d
PS C:\WINDOWS\system32> kubectl expose service prometheus-server --type=NodePort --target-port=9090 --name=prometheus-server-ext
service/prometheus-server-ext exposed
PS C:\WINDOWS\system32> kubectl get svc
NAME                                TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)          AGE
dapp                                ClusterIP      10.102.68.25     <none>        4000/TCP         8d
ganache                             ClusterIP      10.106.248.20    <none>        8545/TCP         9d
kubernetes                          ClusterIP      10.96.0.1        <none>        443/TCP          15d
mongo-express-service               LoadBalancer   10.106.82.114    <pending>     8081:30648/TCP   15d
mongodb-service                     ClusterIP      10.108.145.224   <none>        27017/TCP        15d
note-server-service                 ClusterIP      10.108.249.251   <none>        5000/TCP         15d
note-service                        LoadBalancer   10.110.51.39     <pending>     3000:31125/TCP   15d
prometheus-alertmanager             ClusterIP      10.104.106.135   <none>        9093/TCP         3m41s
prometheus-alertmanager-headless    ClusterIP      None             <none>        9093/TCP         3m41s
prometheus-kube-state-metrics       ClusterIP      10.104.44.1      <none>        8080/TCP         3m41s
prometheus-prometheus-node-exporter ClusterIP      10.106.99.25     <none>        9100/TCP         3m41s
prometheus-prometheus-pushgateway   ClusterIP      10.99.177.66     <none>        9091/TCP         3m41s
prometheus-server                   ClusterIP      10.98.199.223    <none>        80/TCP           3m41s
prometheus-server-ext               NodePort       10.101.233.93    <none>        80:31331/TCP     20s
react                               ClusterIP      10.103.40.245    <none>        3000/TCP         9d
PS C:\WINDOWS\system32> minikube ip
W0206 01:04:32.949696   19152 main.go:291] Unable to resolve the current Docker CLI context "default": context "default": context not found: open C:\Users\dell\.docker\contexts\meta\37a8eec1ce19687d132fe29051dca629d164e2c4958ba141
a33f0688f\meta.json: The system cannot find the path specified.
192.168.49.2
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> helm repo add grafana https://grafana.github.io/helm-charts
"grafana" has been added to your repositories
PS C:\WINDOWS\system32> helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "grafana" chart repository
...Successfully got an update from the "prometheus-community" chart repository
Update Complete. ⎈Happy Helming!⎈
PS C:\WINDOWS\system32> kubectl expose service grafana --type=NodePort --target-port=3000  --name=grafana-ext
Error from server (NotFound): services "grafana" not found
PS C:\WINDOWS\system32> helm install grafana grafana/grafana
NAME: grafana
LAST DEPLOYED: Tue Feb  6 01:05:45 2024
NAMESPACE: default
STATUS: deployed
REVISION: 1
NOTES:
1. Get your 'admin' user password by running:

   kubectl get secret --namespace default grafana -o jsonpath="{.data.admin-password}" | base64 --decode ; echo


2. The Grafana server can be accessed via port 80 on the following DNS name from within your cluster:

   grafana.default.svc.cluster.local

   Get the Grafana URL to visit by running these commands in the same shell:
     export POD_NAME=$(kubectl get pods --namespace default -l "app.kubernetes.io/name=grafana,app.kubernetes.io/instance=grafana" -o jsonpath="{.items[0].metadata.name}")
     kubectl --namespace default port-forward $POD_NAME 3000

3. Login with the password from step 1 and the username: admin
#################################################################################
######   WARNING: Persistence is disabled!!! You will lose your data when   #####
######            the Grafana pod is terminated.                            #####
#################################################################################
PS C:\WINDOWS\system32> kubectl expose service grafana --type=NodePort --target-port=3000  --name=grafana-ext
service/grafana-ext exposed
PS C:\WINDOWS\system32> kubectl get secret --namespace default grafana -o jsonpath="{.data.admin-password}" | base64 --decode ; echo
```

```
PS C:\WINDOWS\system32> kubectl get cm
>> kubectl edit cm prometheus-server
NAME                      DATA   AGE
grafana                   1      2m46s
kube-root-ca.crt          1      15d
prometheus-alertmanager   1      7m54s
prometheus-server         6      7m54s
```

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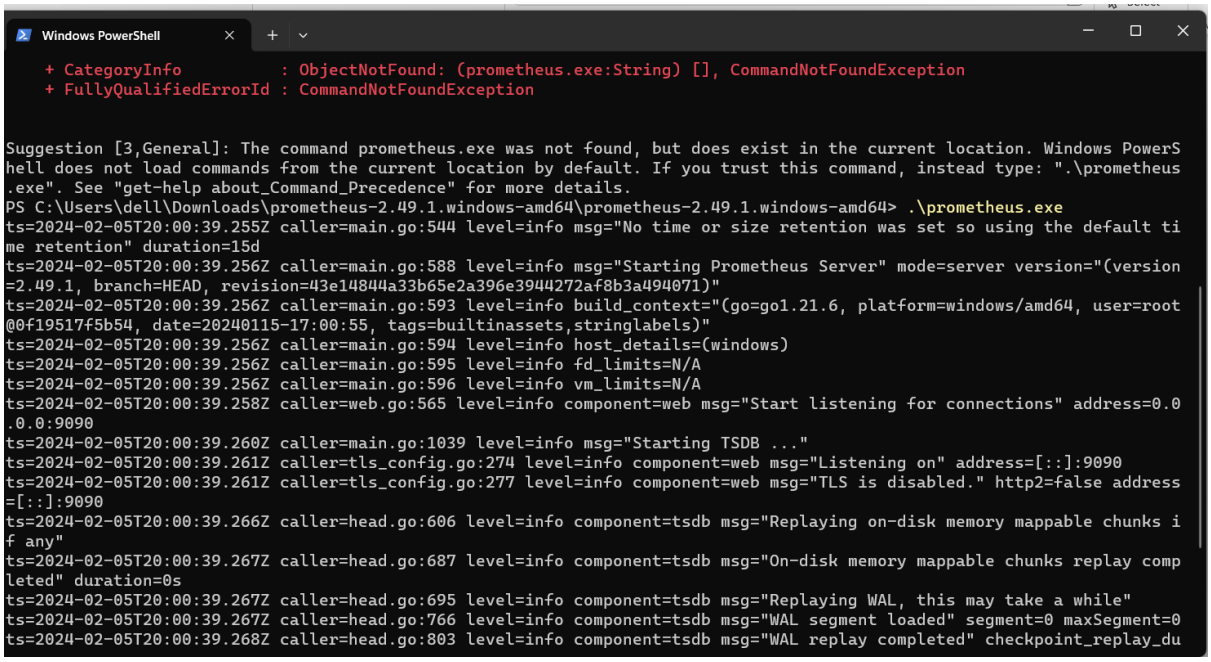
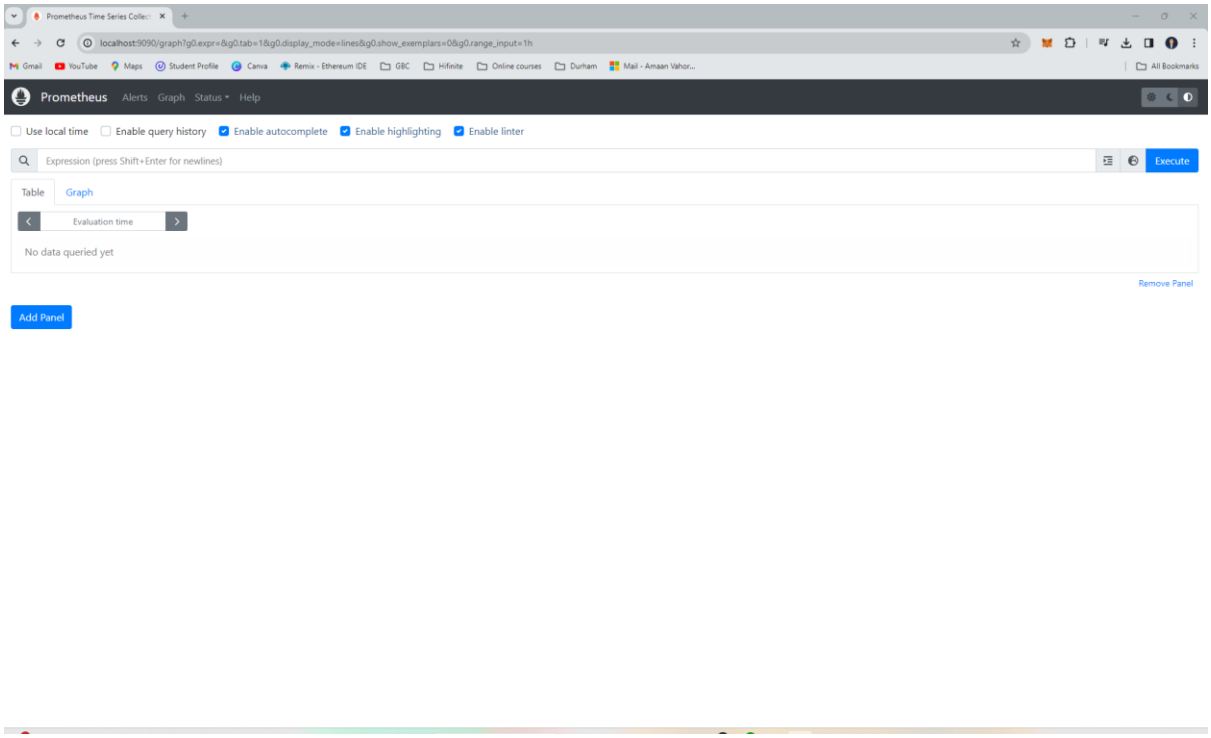

Windows PowerShell
+ CategoryInfo : ObjectNotFound: (prometheus.exe:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException
Suggestion [3,General]: The command prometheus.exe was not found, but does exist in the current location. Windows PowerShell does not load commands from the current location by default. If you trust this command, instead type: ".\prometheus.exe". See "get-help about_Command_Precedence" for more details.
PS C:\Users\dell\Downloads\prometheus-2.49.1.windows-amd64\prometheus-2.49.1.windows-amd64> .\prometheus.exe
ts=2024-02-05T20:00:39.255Z caller=main.go:544 level=info msg="No time or size retention was set so using the default time retention" duration=15d
ts=2024-02-05T20:00:39.256Z caller=main.go:588 level=info msg="Starting Prometheus Server" mode=server version="(version=2.49.1, branch=HEAD, revision=43e14844a33b65e2a396e3944272af8b3a494071)"
ts=2024-02-05T20:00:39.256Z caller=main.go:593 level=info build_context="(go=go1.21.6, platform=windows/amd64, user=root@0f19517f5b54, date=20240115-17:00:55, tags=builtinassets,stringlabels)"
ts=2024-02-05T20:00:39.256Z caller=main.go:594 level=info host_details=(windows)
ts=2024-02-05T20:00:39.256Z caller=main.go:595 level=info fd_limits=N/A
ts=2024-02-05T20:00:39.256Z caller=main.go:596 level=info vm_limits=N/A
ts=2024-02-05T20:00:39.258Z caller=web.go:565 level=info component=web msg="Start listening for connections" address=0.0.0.0:9090
ts=2024-02-05T20:00:39.260Z caller=main.go:1039 level=info msg="Starting TSDB ..."
ts=2024-02-05T20:00:39.261Z caller=tls_config.go:274 level=info component=web msg="Listening on" address=[::]:9090
ts=2024-02-05T20:00:39.261Z caller=tls_config.go:277 level=info component=web msg="TLS is disabled." http2=false address=[::]:9090
ts=2024-02-05T20:00:39.266Z caller=head.go:606 level=info component=tsdb msg="Replaying on-disk memory mappable chunks if any"
ts=2024-02-05T20:00:39.267Z caller=head.go:687 level=info component=tsdb msg="On-disk memory mappable chunks replay completed" duration=0s
ts=2024-02-05T20:00:39.267Z caller=head.go:695 level=info component=tsdb msg="Replaying WAL, this may take a while"
ts=2024-02-05T20:00:39.267Z caller=head.go:766 level=info component=tsdb msg="WAL segment loaded" segment=0 maxSegment=0
ts=2024-02-05T20:00:39.268Z caller=head.go:803 level=info component=tsdb msg="WAL replay completed" checkpoint_replay_du


Prometheus
Alerts
Graph
Status
Help
Use local time
Enable query history
Enable autocomplete
Enable highlighting
Enable linter
Expression (press Shift+Enter for newlines)
Execute
Table
Graph
Evaluation time
No data queried yet
Remove Panel
Add Panel

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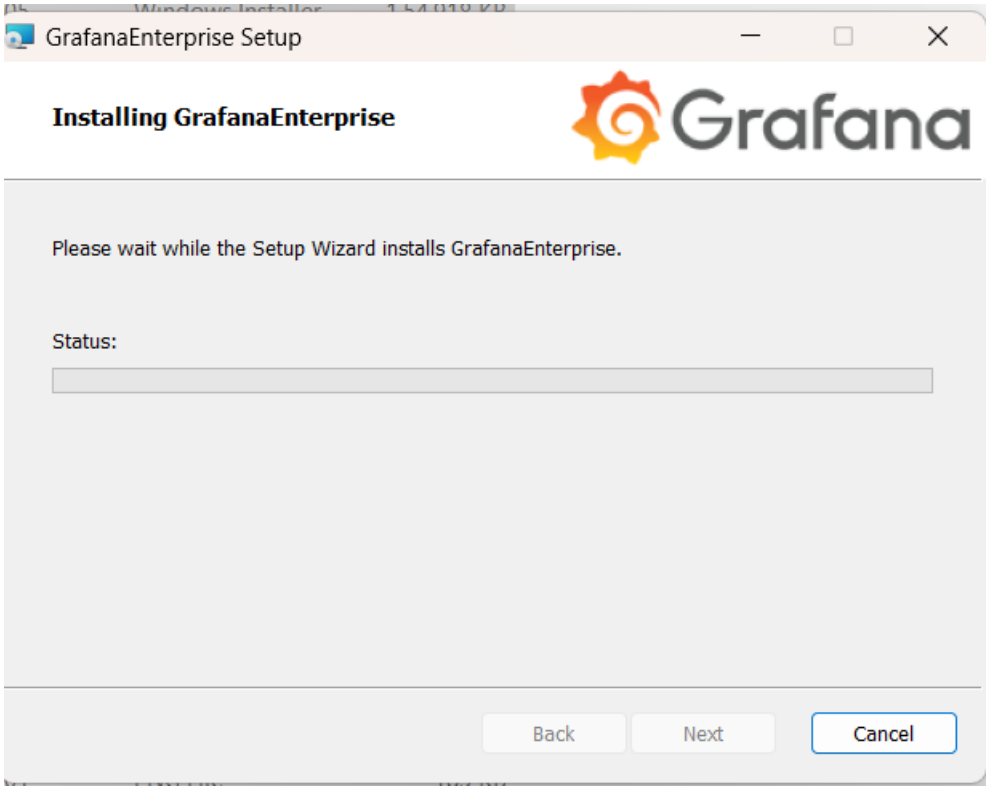

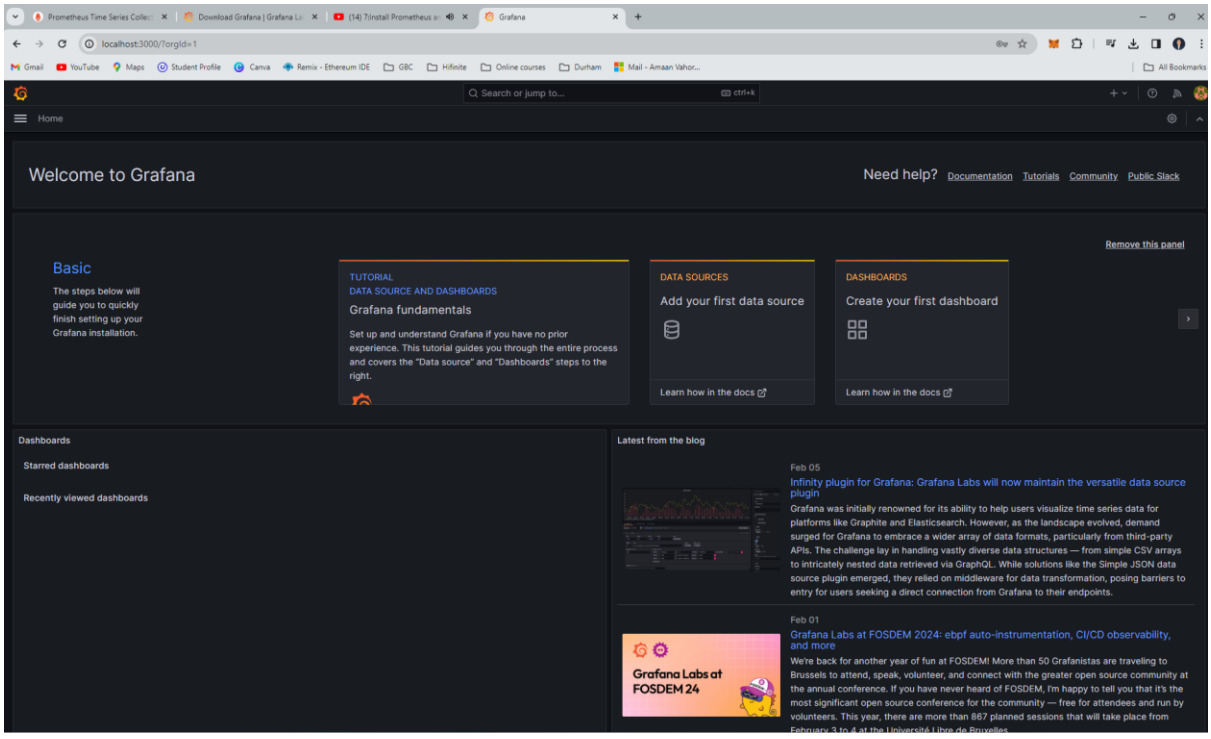

Dashboards: -

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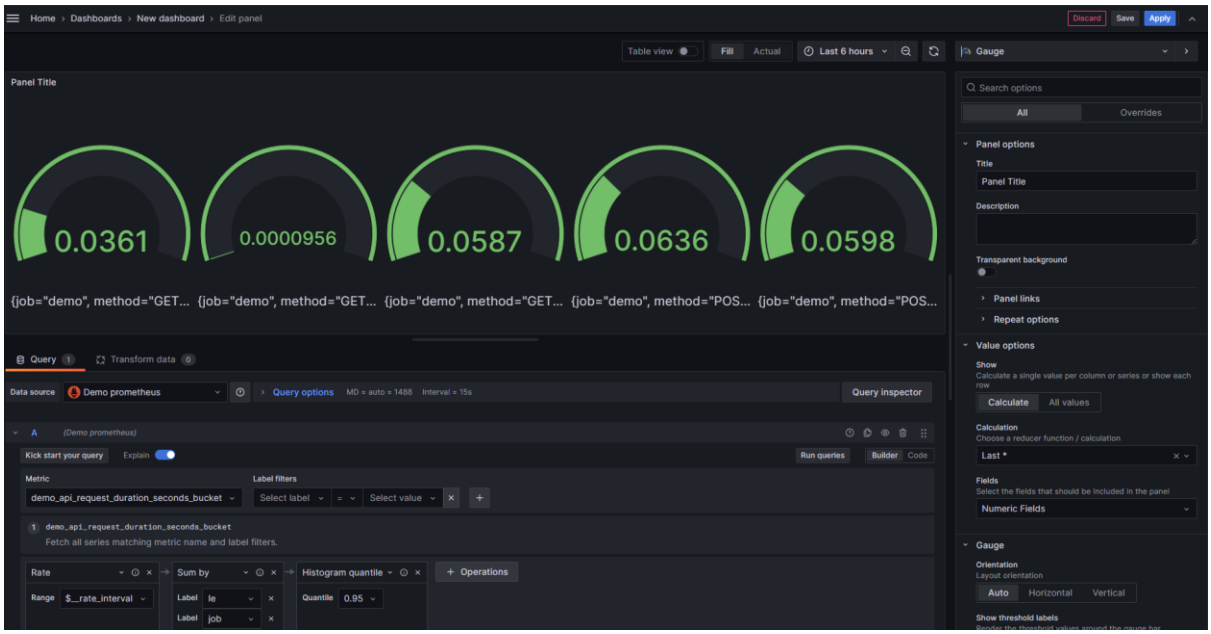
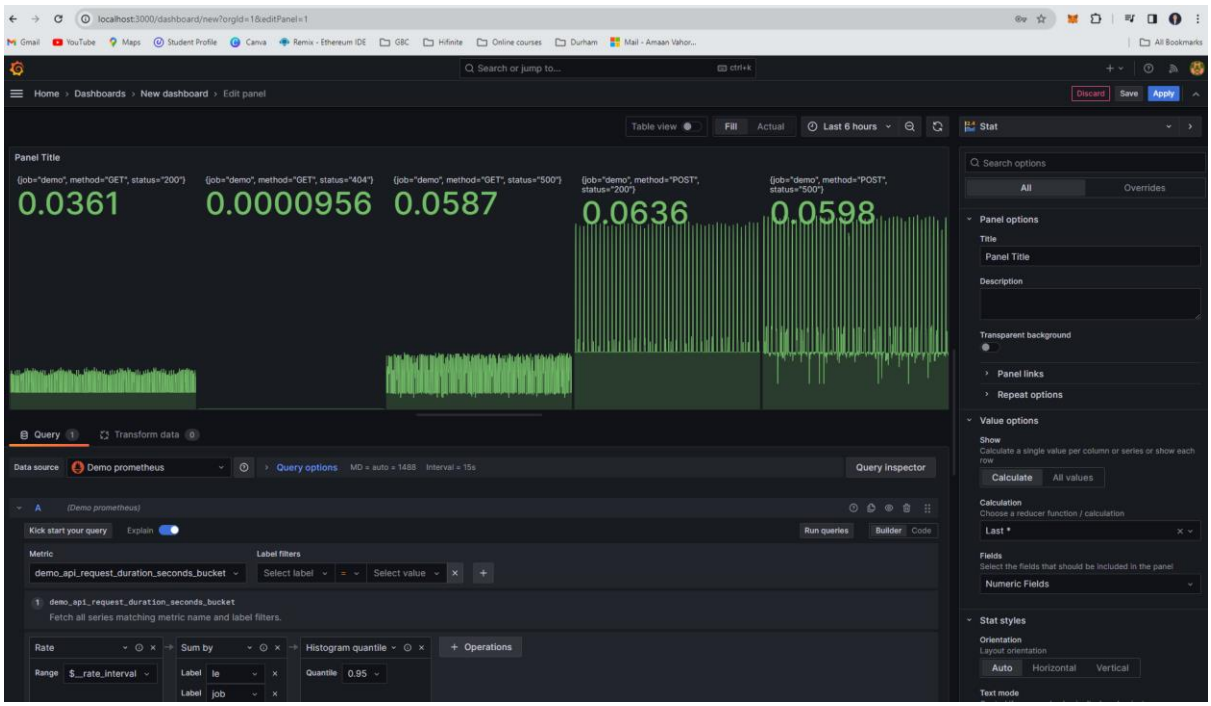
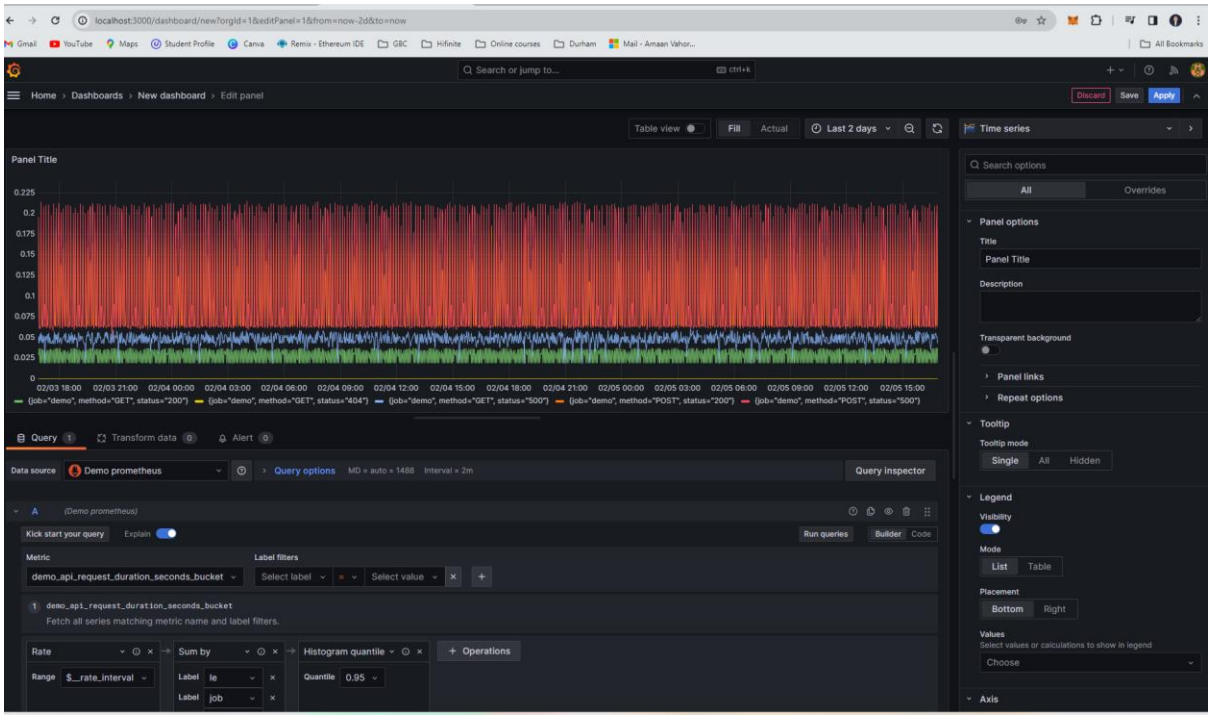
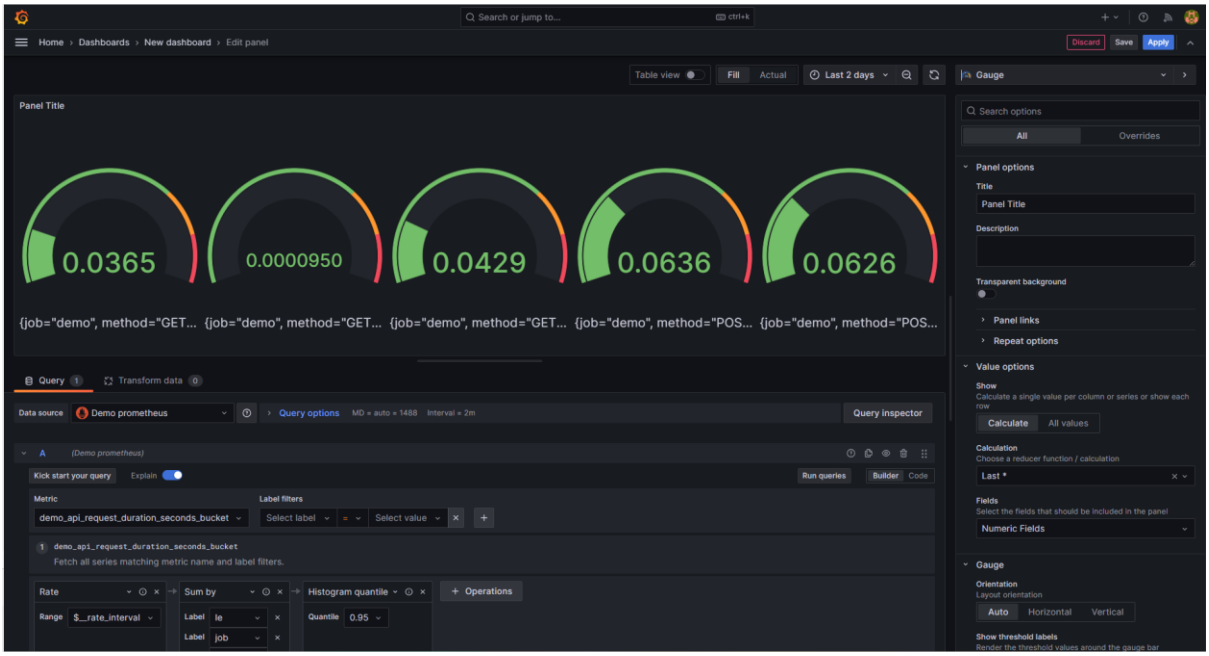

Home › Dashboards › New dashboard › Edit panel
Discard
Save
Apply
Table view
Fill
Actual
Last 6 hours
Gauge
Panel Title
0.0361
0.0000956
0.0587
0.0636
0.0598
{job="demo", method="GET... {job="demo", method="GET... {job="demo", method="GET... {job="demo", method="POS... {job="demo", method="POS...
Search options
All
Overrides
Panel options
Title
Panel Title
Description
Transparent background
Panel links
Repeat options
Value options
Show
Calculate a single value per column or series or show each row
Calculate
All values
Calculation
Choose a reducer function / calculation
Last *
Fields
Select the fields that should be included in the panel
Numeric Fields
Gauge
Orientation
Layout orientation
Auto
Horizontal
Vertical
Show threshold labels
Query
Transform data
Data source
Demo prometheus
Query options
MD = auto = 1488
Interval = 15s
Query inspector
A
(Demo prometheus)
Kick start your query
Explain
Run queries
Builder
Code
Metric
Label filters
demo_api_request_duration_seconds_bucket
Select label
Select value
demo_api_request_duration_seconds_bucket
Fetch all series matching metric name and label filters.
Rate
Sum by
Histogram quantile
Operations
Range
$__rate_interval
Label
le
Quantile
0.95
Label
job


localhost:3000/dashboard/new?orgId=1&editPanel=1
Home › Dashboards › New dashboard › Edit panel
Discard
Save
Apply
Table view
Fill
Actual
Last 6 hours
Stat
Panel Title
{job="demo", method="GET", status="200"}
0.0361
{job="demo", method="GET", status="404"}
0.0000956
{job="demo", method="GET", status="500"}
0.0587
{job="demo", method="POST", status="200"}
0.0636
{job="demo", method="POST", status="500"}
0.0598
Search options
All
Overrides
Panel options
Title
Panel Title
Description
Transparent background
Panel links
Repeat options
Value options
Show
Calculate a single value per column or series or show each row
Calculate
All values
Calculation
Choose a reducer function / calculation
Last *
Fields
Select the fields that should be included in the panel
Numeric Fields
Stat styles
Orientation
Layout orientation
Auto
Horizontal
Vertical
Text mode
Query
Transform data
Data source
Demo prometheus
Query options
MD = auto = 1488
Interval = 15s
Query inspector
A
(Demo prometheus)
Kick start your query
Explain
Run queries
Builder
Code
Metric
Label filters
demo_api_request_duration_seconds_bucket
Select label
Select value
demo_api_request_duration_seconds_bucket
Fetch all series matching metric name and label filters.
Rate
Sum by
Histogram quantile
Operations
Range
$__rate_interval
Label
le
Quantile
0.95
Label
job

LAB-5


Home › Dashboards › New dashboard › Edit panel
Discard
Save
Apply
Table view
Fill
Actual
Last 2 days
Time series
Panel Title
Query
Transform data
Alert
Data source
Demo prometheus
Query options
Query inspector
Kick start your query
Explain
Run queries
Builder
Code
Metric
Label filters
demo_api_request_duration_seconds_bucket
Select label
Select value
Fetch all series matching metric name and label filters.
Rate
Sum by
Histogram quantile
Operations
Range
$__rate_interval
Label
le
job
Quantile
0.95
Panel options
Title
Description
Transparent background
Panel links
Repeat options
Tooltip
Tooltip mode
Single
All
Hidden
Legend
Visibility
Mode
List
Table
Placement
Bottom
Right
Values
Choose
Axis


Home › Dashboards › New dashboard › Edit panel
Discard
Save
Apply
Table view
Fill
Actual
Last 2 days
Gauge
Panel Title
0.0365
0.0000950
0.0429
0.0636
0.0626
{job="demo", method="GET... {job="demo", method="GET... {job="demo", method="GET... {job="demo", method="POS... {job="demo", method="POS...
Query
Transform data
Data source
Demo prometheus
Query options
Query inspector
Kick start your query
Explain
Run queries
Builder
Code
Metric
Label filters
demo_api_request_duration_seconds_bucket
Select label
Select value
Fetch all series matching metric name and label filters.
Rate
Sum by
Histogram quantile
Operations
Range
$__rate_interval
Label
le
job
Quantile
0.95
Panel options
Title
Description
Transparent background
Panel links
Repeat options
Value options
Show
Calculate a single value per column or series or show each row
Calculate
All values
Calculation
Choose a reducer function / calculation
Last *
Fields
Select the fields that should be included in the panel
Numeric Fields
Gauge
Orientation
Layout orientation
Auto
Horizontal
Vertical
Show threshold labels
Render the threshold values around the gauge bar