appviewx

Kubernetes Graceful Shutdown Guide

Version: 2022.1.0

Copyright AppViewX, Inc.

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

This document may not be copied, disclosed, transferred, or modified without the prior written consent of AppViewX, Inc. While all content is believed to be correct at the time of publication, it is provided as general-purpose information. The content is subject to change without notice and is provided “as is” and with no expressed or implied warranties whatsoever, including, but not limited to, a warranty for accuracy made by AppViewX. The software described in this document is provided under written license only, contains valuable trade secrets and proprietary information, and is protected by the copyright laws of the United States and other countries. Unauthorized use of software or its documentation can result in civil damages and criminal prosecution.

Trademarks

The trademarks, logos, and service marks displayed in this manual are the property of AppViewX or other third parties. Users are not permitted to use these marks without the prior written consent of AppViewX or such third party which may own the mark.

External Reference Links

This product includes software developed by the CentOS Project (www.centos.org).

This product includes software developed by Red Hat, Inc. (www.redhat.com).

This product includes software developed by VMware, Inc. (www.vmware.com).

All other trademarks mentioned in this document are the property of their respective owners.

Contact Information

AppViewX, Inc.

222 Broadway, FL 19

New York, NY 10038

Email: info@appviewx.com

Web: www.appviewx.com

Contents

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

Preface

Revision History

Revision	Description	Date
1.0	Initial release of document for Release 2022.1.0	June 2022

About this Guide

This guide outlines the kubernetes adoption guide.

Text Conventions

The following text conventions are used in this document:

Convention	Description
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`codeblock`	Indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Chapter 1: Overview

Enable the application’s graceful stop/start across server reboots.

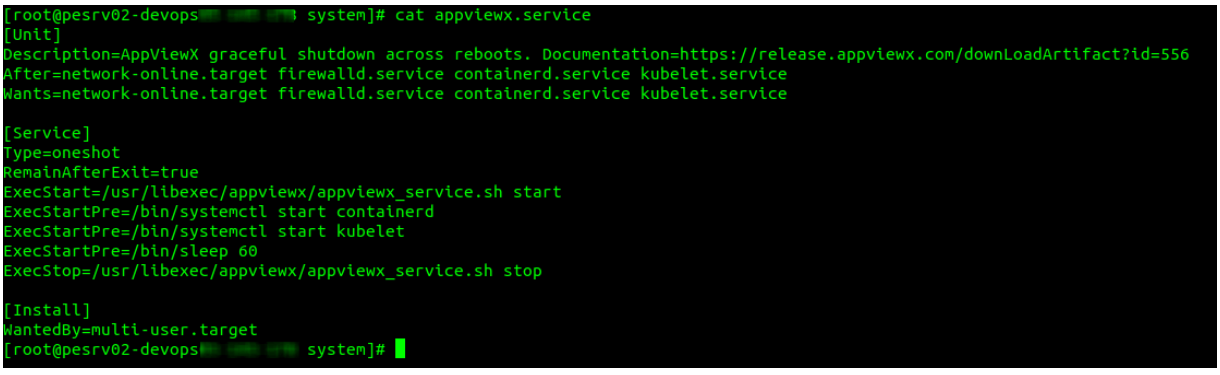
Note: For Multi-Node setup, follow the instructions at each node to enable the graceful stop/start across multi nodes.

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

Chapter 2: Enabling Graceful Start and Stop

1. Login to the AppViewX Server as a root user via SSH.
2. To navigate to the **/etc/systemd/system/** directory, execute the following command: `cd /etc/systemd/system/`
3. To create a new **appviewx.service** file, execute the following command: `vi appviewx.service`
4. Enter the following details:

```
[Unit]

Description=AppViewX graceful shutdown across reboots. Documentation=https://release.appviewx.com/downLoadArtifact?id=556

After=network-online.target firewalld.service containerd.service kubelet.service

Wants=network-online.target firewalld.service containerd.service kubelet.service

[Service]

Type=oneshot

RemainAfterExit=true

ExecStart=/usr/libexec/appviewx/appviewx_service.sh start

ExecStartPre=/bin/systemctl start containerd

ExecStartPre=/bin/systemctl start kubelet

ExecStartPre=/bin/sleep 60

ExecStop=/usr/libexec/appviewx/appviewx_service.sh stop

[Install]

WantedBy=multi-user.target
```



5. To create the **appviewx** directory, execute the following command: `mkdir -p /usr/libexec/appviewx`
6. To navigate to the **appviewx** directory, execute the following command: `cd /usr/libexec/appviewx/`
7. To create the **appviewx_service.sh** script file, execute the following command: `vi appviewx_service.sh`
8. Enter the following details:

```
#!/bin/bash

# appviewx graceful shutdown
```

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

```
case $1 in

stop)

echo "=========="$(date)"==========" >> /var/log/appviewx_services.log

systemctl list-jobs | egrep -q 'reboot.target.*start' && echo "server reboot" >> /var/log/appviewx_services.log

systemctl list-jobs | egrep -q 'shutdown.target.*start' && echo "sever shutdown" >> /var/log/appviewx_services.log

PATH=/sbin:/usr/sbin:$PATH

su -s /bin/bash appviewx -c "kubectl drain $(hostname) \

--delete-local-data --ignore-daemonsets --timeout 30s --force \

|| kubectl drain $(hostname) --delete-local-data \

--ignore-daemonsets --timeout 30s --force --disable-eviction \

|| true" >> /var/log/appviewx_services.log

;;

start)

PATH=/sbin:/usr/sbin:$PATH

su -s /bin/bash appviewx -c "kubectl uncordon $(hostname)" >> /var/log/appviewx_services.log

;;

esac
```

```
[root@ip- ~]# cat /etc/init.d/appviewx_service.sh
#!/bin/bash
# appviewx graceful shutdown

case $1 in
        stop)
        echo "=========="$(date)"==========" >> /var/log/appviewx_services.log
        systemctl list-jobs | egrep -q 'reboot.target.*start' && echo "server reboot" >> /var/log/appviewx_services.log
        systemctl list-jobs | egrep -q 'shutdown.target.*start' && echo "sever shutdown" >> /var/log/appviewx_services.log
        PATH=/sbin:/usr/sbin:$PATH
        su -s /bin/bash appviewx -c "kubectl drain $(hostname) \
        --delete-local-data --ignore-daemonsets --timeout 30s  --force \
        || kubectl drain $(hostname) --delete-local-data \
        --ignore-daemonsets --timeout 30s  --force --disable-eviction \
        || true" >> /var/log/appviewx_services.log
        ;;

        start)
        PATH=/sbin:/usr/sbin:$PATH
        su -s /bin/bash appviewx -c "kubectl uncordon $(hostname)" >> /var/log/appviewx_services.log
        ;;
esac
[root@ip- ~]#
```

9. To assign execute permissions to the **appviewx_service.sh** script file, execute the following command:

   ```
   chmod u+x /usr/libexec/appviewx/appviewx_service.sh
   ```

10. To navigate to the **system** directory, execute the following command:

    ```
    cd /etc/systemd/system/
    ```

11. To reload the **daemon**, execute the following command:

    ```
    systemctl daemon-reload
    ```

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

12. To enable the **appviewx** service, execute the following command:

```
systemctl enable appviewx.service
```

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

Chapter 3: Outcome

We reaped a lot of benefits by adoption of Kubernetes with service mesh capabilities in terms of scale, performance and immutable infrastructure.

• **Optimal resource usage**:

We were able to make better use of the resource using custom metrics and scaling the pods when in demand.

• **Security**:

With service mesh and zero trust network model we were able to achieve higher and tightened security around the perimeter of the cluster.

• **Zero downtime:**

We were able to achieve zero downtime for upgrading AppViewX microservices.

• **Managed CI/CD**:

Better management of deployment code through modularity. Refined the way we build, package, deploy and manage applications.

Copyright © 2022 AppViewX, Inc. All Rights Reserved.

Chapter 4: References

1. https://kubernetes.io/docs/home/ - Kubernetes Object and cluster management
2. https://docs.projectcalico.org/about/about-calico - Calico overview and working
3. https://octetz.com/docs/2020/2020-10-01-calico-routing-modes/ - To understand calico routing
4. https://docs.projectcalico.org/reference/resources/networkpolicy#selector - Calico network policy
5. https://istio.io/latest/docs/concepts/ - ISTIO overview and concepts

Copyright © 2022 AppViewX, Inc. All Rights Reserved.