



NVA-1160: Red Hat OpenShift with NetApp

NetApp Solutions

Alan V Cowles, Nikhil M Kulkarni
September 09, 2021

This PDF was generated from https://docs.netapp.com/us-en/netapp-solutions/containers/rh-os-n_solution_overview.html on October 21, 2021. Always check docs.netapp.com for the latest.

Table of Contents

- NVA-1160: Red Hat OpenShift with NetApp 1
 - Use cases 1
 - Business value 1
 - Technology overview 1
 - Advanced configuration options 2
 - Current support matrix for validated releases 2

NVA-1160: Red Hat OpenShift with NetApp

Alan Cowles and Nikhil M Kulkarni, NetApp

This reference document provides deployment validation of the Red Hat OpenShift solution, deployed through Installer Provisioned Infrastructure (IPI) in several different data center environments as validated by NetApp. It also details storage integration with NetApp storage systems by making use of the Astra Trident storage orchestrator for the management of persistent storage. Lastly, a number of solution validations and real world use cases are explored and documented.

Use cases

The Red Hat OpenShift with NetApp solution is architected to deliver exceptional value for customers with the following use cases:

- Easy to deploy and manage Red Hat OpenShift deployed using IPI (Installer Provisioned Infrastructure) on bare metal, Red Hat OpenStack Platform, Red Hat Virtualization, and VMware vSphere.
- Combined power of enterprise container and virtualized workloads with Red Hat OpenShift deployed virtually on OSP, RHV, or vSphere, or on bare metal with OpenShift Virtualization.
- Real world configuration and use cases highlighting the features of Red Hat OpenShift when used with NetApp storage and Astra Trident, the open source storage orchestrator for Kubernetes.

Business value

Enterprises are increasingly adopting DevOps practices to create new products, shorten release cycles, and rapidly add new features. Because of their innate agile nature, containers and microservices play a crucial role in supporting DevOps practices. However, practicing DevOps at a production scale in an enterprise environment presents its own challenges and imposes certain requirements on the underlying infrastructure, such as the following:

- High availability at all layers in the stack
- Ease of deployment procedures
- Non-disruptive operations and upgrades
- API-driven and programmable infrastructure to keep up with microservices agility
- Multitenancy with performance guarantees
- Ability to run virtualized and containerized workloads simultaneously
- Ability to scale infrastructure independently based on workload demands

Red Hat OpenShift with NetApp acknowledges these challenges and presents a solution that helps address each concern by implementing the fully automated deployment of Red Hat OpenShift IPI in the customer's choice of data center environment.

Technology overview

The Red Hat OpenShift with NetApp solution is comprised of the following major components:

Red Hat OpenShift Container Platform

Red Hat OpenShift Container Platform is a fully supported enterprise Kubernetes platform. Red Hat makes several enhancements to open-source Kubernetes to deliver an application platform with all the components fully integrated to build, deploy, and manage containerized applications.

For more information visit the OpenShift website [here](#).

NetApp storage systems

NetApp has several storage systems perfect for enterprise data centers and hybrid cloud deployments. The NetApp portfolio includes NetApp ONTAP, NetApp Element, and NetApp e-Series storage systems, all of which can provide persistent storage for containerized applications.

For more information visit the NetApp website [here](#).

NetApp storage integrations

NetApp Astra Control Center offers a rich set of storage and application-aware data management services for stateful Kubernetes workloads, deployed in an on-prem environment and powered by trusted NetApp data protection technology.

For more information, visit the NetApp Astra website [here](#).

Astra Trident is an open-source and fully-supported storage orchestrator for containers and Kubernetes distributions, including Red Hat OpenShift.

For more information, visit the Astra Trident website [here](#).

Advanced configuration options

This section is dedicated to customizations that real world users would likely need to perform when deploying this solution into production, such as creating a dedicated private image registry or deploying custom load balancer instances.

Current support matrix for validated releases

Technology	Purpose	Software version
NetApp ONTAP	Storage	9.8, 9.9.1
NetApp Element	Storage	12.3
NetApp Astra Control Center	Application Aware Data Management	21.08.65
NetApp Astra Trident	Storage Orchestration	21.07.1
Red Hat OpenShift	Container orchestration	4.6 EUS, 4.7
Red Hat OpenStack Platform	Private Cloud Infrastructure	16.1
Red Hat Virtualization	Data center virtualization	4.4
VMware vSphere	Data center virtualization	6.7U3

Next: Red Hat OpenShift Overview.

Copyright Information

Copyright © 2021 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system-without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.