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Abstract

This document outlines the major features, enhancements, and known issues in this release of Red Hat OpenStack Platform.
3.3.5. Release Notes
3.3.6. Known Issues
3.3.7. Deprecated Functionality

CHAPTER 4. TECHNICAL NOTES

4.1. RHEA-2021:3483 – RELEASE OF COMPONENTS FOR OSP 16.2
4.2. RHSA-2022:0995 – RELEASE OF COMPONENTS FOR OSP 16.2
4.3. RHSA-2022:1001 – RELEASE OF COMPONENTS FOR OSP 16.2
MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright’s message.
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CHAPTER 1. INTRODUCTION

1.1. ABOUT THIS RELEASE

This release of Red Hat OpenStack Platform is based on the OpenStack "Train" release. It includes additional features, known issues, and resolved issues specific to Red Hat OpenStack Platform.

Only changes specific to Red Hat OpenStack Platform are included in this document. The release notes for the OpenStack "Train" release itself are available at the following location: https://releases.openstack.org/train/index.html.

Red Hat OpenStack Platform uses components from other Red Hat products. For specific information pertaining to the support of these components, see https://access.redhat.com/site/support/policy/updates/openstack/platform/.

To evaluate Red Hat OpenStack Platform, sign up at http://www.redhat.com/openstack/.

NOTE

The Red Hat Enterprise Linux High Availability Add-On is available for Red Hat OpenStack Platform use cases. For more details about the add-on, see http://www.redhat.com/products/enterprise-linux-add-ons/high-availability/. For details about the package versions to use in combination with Red Hat OpenStack Platform, see https://access.redhat.com/site/solutions/509783.

1.2. REQUIREMENTS

This version of Red Hat OpenStack Platform runs on the most recent fully supported release of Red Hat Enterprise Linux 8.4.

The dashboard for this release supports the latest stable versions of the following web browsers:

- Chrome
- Mozilla Firefox
- Mozilla Firefox ESR
- Internet Explorer 11 and later (with Compatibility Mode disabled)

NOTE

Because Internet Explorer 11 is no longer maintained, expect a degradation of functionality when displaying the dashboard.

NOTE

Before you deploy Red Hat OpenStack Platform, it is important to consider the characteristics of the available deployment methods. For more information, see Installing and Managing Red Hat OpenStack Platform.

1.3. DEPLOYMENT LIMITS
For a list of deployment limits for Red Hat OpenStack Platform, see Deployment Limits for Red Hat OpenStack Platform.

1.4. DATABASE SIZE MANAGEMENT

For recommended practices on maintaining the size of the MariaDB databases in your Red Hat OpenStack Platform environment, see Database Size Management for Red Hat Enterprise Linux OpenStack Platform.

1.5. CERTIFIED DRIVERS AND PLUG-INS

For a list of the certified drivers and plug-ins in Red Hat OpenStack Platform, see Component, Plug-In, and Driver Support in Red Hat OpenStack Platform.

1.6. CERTIFIED GUEST OPERATING SYSTEMS

For a list of the certified guest operating systems in Red Hat OpenStack Platform, see Certified Guest Operating Systems in Red Hat OpenStack Platform and Red Hat Enterprise Virtualization.

1.7. PRODUCT CERTIFICATION CATALOG

For a list of the Red Hat Official Product Certification Catalog, see Product Certification Catalog.

1.8. BARE METAL PROVISIONING OPERATING SYSTEMS

For a list of the guest operating systems that can be installed on bare metal nodes in Red Hat OpenStack Platform through Bare Metal Provisioning (ironic), see Supported Operating Systems Deployable With Bare Metal Provisioning (ironic).

1.9. HYPERVISOR SUPPORT

This release of the Red Hat OpenStack Platform is supported only with the libvirt driver (using KVM as the hypervisor on Compute nodes).

This release of the Red Hat OpenStack Platform runs with Bare Metal Provisioning.

Bare Metal Provisioning has been fully supported since the release of Red Hat OpenStack Platform 7 (Kilo). You can use Bare Metal Provisioning to provision bare-metal machines by using common technologies such as PXE and IPMI, to cover a wide range of hardware while supporting pluggable drivers to allow the addition of vendor-specific functionality.

Red Hat does not provide support for other Compute virtualization drivers such as the deprecated VMware "direct-to-ESX" hypervisor or non-KVM libvirt hypervisors.

1.10. CONTENT DELIVERY NETWORK (CDN) REPOSITORIES

This section describes the repositories required to deploy Red Hat OpenStack Platform 16.2.

You can install Red Hat OpenStack Platform 16.2 through the Content Delivery Network (CDN) using subscription-manager. For more information, see Preparing the undercloud.
**WARNING**

Some packages in the Red Hat OpenStack Platform software repositories conflict with packages provided by the Extra Packages for Enterprise Linux (EPEL) software repositories. The use of Red Hat OpenStack Platform on systems with the EPEL software repositories enabled is unsupported.

### 1.10.1. Undercloud repositories

Red Hat OpenStack Platform 16.2 runs on Red Hat Enterprise Linux 8.4. As a result, you must lock the content from these repositories to the respective Red Hat Enterprise Linux version.

**NOTE**

If you synchronize repositories with Red Hat Satellite, you can enable specific versions of the Red Hat Enterprise Linux repositories. However, the repository remains the same despite the version you choose. For example, you can enable the 8.4 version of the BaseOS repository, but the repository name is still `rhel-8-for-x86_64-baseos-eus-rpms` despite the specific version you choose.

**WARNING**

Any repositories outside the ones specified here are not supported. Unless recommended, do not enable any other products or repositories outside the ones listed in the following tables or else you might encounter package dependency issues. Do not enable Extra Packages for Enterprise Linux (EPEL).

### Core repositories

The following table lists core repositories for installing the undercloud.

<table>
<thead>
<tr>
<th>Name</th>
<th>Repository</th>
<th>Description of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs) Extended Update Support (EUS)</td>
<td><code>rhel-8-for-x86_64-baseos-eus-rpms</code></td>
<td>Base operating system repository for x86_64 systems.</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)</td>
<td><code>rhel-8-for-x86_64-appstream-eus-rpms</code></td>
<td>Contains Red Hat OpenStack Platform dependencies.</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - High Availability (RPMs) Extended Update Support (EUS)</td>
<td><code>rhel-8-for-x86_64-highavailability-eus-rpms</code></td>
<td>High availability tools for Red Hat Enterprise Linux. Used for Controller node high availability.</td>
</tr>
<tr>
<td>Name</td>
<td>Repository</td>
<td>Description of requirement</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Red Hat Ansible Engine 2.9 for RHEL 8 x86_64 (RPMs)</td>
<td>ansible-2.9-for-rhel-8-x86_64-rpms</td>
<td>Ansible Engine for Red Hat Enterprise Linux. Used to provide the latest version of Ansible.</td>
</tr>
<tr>
<td>Red Hat Satellite Tools for RHEL 8 Server RPMs x86_64</td>
<td>satellite-tools-&lt;satellite_version&gt;-for-rhel-8-x86_64-rpms</td>
<td>Tools for managing hosts with Red Hat Satellite 6, where &lt;satellite_version&gt; is the version of Red Hat Satellite Server that you use.</td>
</tr>
<tr>
<td>Red Hat OpenStack Platform 16.2 for RHEL 8 (RPMs)</td>
<td>openstack-16.2-for-rhel-8-x86_64-rpms</td>
<td>Core Red Hat OpenStack Platform repository, which contains packages for Red Hat OpenStack Platform director.</td>
</tr>
<tr>
<td>Red Hat Fast Datapath for RHEL 8 (RPMS)</td>
<td>fast-datapath-for-rhel-8-x86_64-rpms</td>
<td>Provides Open vSwitch (OVS) packages for OpenStack Platform.</td>
</tr>
</tbody>
</table>

**Ceph repositories**

The following table lists Ceph Storage related repositories for the undercloud.

<table>
<thead>
<tr>
<th>Name</th>
<th>Repository</th>
<th>Description of Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Ceph Storage Tools 4 for RHEL 8 x86_64 (RPMs)</td>
<td>rhceph-4-tools-for-rhel-8-x86_64-rpms</td>
<td>Provides tools for nodes to communicate with the Ceph Storage cluster. The undercloud requires the ceph-ansible package from this repository if you plan to use Ceph Storage in your overcloud or if you want to integrate with an existing Ceph Storage cluster.</td>
</tr>
</tbody>
</table>

**IBM POWER repositories**

The following table contains a list of repositories for Red Hat Openstack Platform on POWER PC architecture. Use these repositories in place of equivalents in the Core repositories.

<table>
<thead>
<tr>
<th>Name</th>
<th>Repository</th>
<th>Description of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Enterprise Linux for IBM Power, little endian - BaseOS (RPMs)</td>
<td>rhel-8-for-ppc64le-baseos-rpms</td>
<td>Base operating system repository for ppc64le systems.</td>
</tr>
</tbody>
</table>
### Name | Repository | Description of requirement
--- | --- | ---
Red Hat Enterprise Linux 8 for IBM Power, little endian - AppStream (RPMs) | rhel-8-for-ppc64le-appstream-rpms | Contains Red Hat OpenStack Platform dependencies.
Red Hat Enterprise Linux 8 for IBM Power, little endian - High Availability (RPMs) | rhel-8-for-ppc64le-highavailability-rpms | High availability tools for Red Hat Enterprise Linux. Used for Controller node high availability.
Red Hat Fast Datapath for RHEL 8 IBM Power, little endian (RPMS) | fast-datapath-for-rhel-8-ppc64le-rpms | Provides Open vSwitch (OVS) packages for OpenStack Platform.
Red Hat Ansible Engine 2.9 for RHEL 8 IBM Power, little endian (RPMs) | ansible-2.9-for-rhel-8-ppc64le-rpms | Ansible Engine for Red Hat Enterprise Linux. Provides the latest version of Ansible.
Red Hat OpenStack Platform 16.2 for RHEL 8 (RPMs) | openstack-16.2-for-rhel-8-ppc64le-rpms | Core Red Hat OpenStack Platform repository for ppc64le systems.

### 1.10.2. Overcloud repositories

Red Hat OpenStack Platform 16.2 runs on Red Hat Enterprise Linux 8.4. As a result, you must lock the content from these repositories to the respective Red Hat Enterprise Linux version.

**NOTE**

If you synchronize repositories with Red Hat Satellite, you can enable specific versions of the Red Hat Enterprise Linux repositories. However, the repository remains the same despite the version you choose. For example, you can enable the 8.4 version of the BaseOS repository, but the repository name is still `rhel-8-for-x86_64-baseos-eus-rpms` despite the specific version you choose.

**WARNING**

Any repositories outside the ones specified here are not supported. Unless recommended, do not enable any other products or repositories outside the ones listed in the following tables or else you might encounter package dependency issues. Do not enable Extra Packages for Enterprise Linux (EPEL).

### Controller node repositories

The following table lists core repositories for Controller nodes in the overcloud.
<table>
<thead>
<tr>
<th>Name</th>
<th>Repository</th>
<th>Description of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)</td>
<td>rhel-8-for-x86_64-baseos-eus-rpms</td>
<td>Base operating system repository for x86_64 systems.</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)</td>
<td>rhel-8-for-x86_64-appstream-eus-rpms</td>
<td>Contains Red Hat OpenStack Platform dependencies.</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - High Availability (RPMs)</td>
<td>rhel-8-for-x86_64-highavailability-eus-rpms</td>
<td>High availability tools for Red Hat Enterprise Linux.</td>
</tr>
<tr>
<td>Red Hat Ansible Engine 2.9 for RHEL 8 x86_64 (RPMs)</td>
<td>ansible-2.9-for-rhel-8-x86_64-rpms</td>
<td>Ansible Engine for Red Hat Enterprise Linux. Used to provide the latest version of Ansible.</td>
</tr>
<tr>
<td>Red Hat OpenStack Platform 16.2 for RHEL 8 (RPMs)</td>
<td>openstack-16.2-for-rhel-8-x86_64-rpms</td>
<td>Core Red Hat OpenStack Platform repository.</td>
</tr>
<tr>
<td>Red Hat Fast Datapath for RHEL 8 (RPMS)</td>
<td>fast-datapath-for-rhel-8-x86_64-rpms</td>
<td>Provides Open vSwitch (OVS) packages for OpenStack Platform.</td>
</tr>
<tr>
<td>Red Hat Ceph Storage Tools 4 for RHEL 8 x86_64 (RPMs)</td>
<td>rhceph-4-tools-for-rhel-8-x86_64-rpms</td>
<td>Tools for Red Hat Ceph Storage 4 for Red Hat Enterprise Linux 8.</td>
</tr>
<tr>
<td>Red Hat Satellite Tools for RHEL 8 Server RPMs x86_64</td>
<td>satellite-tools-&lt;satellite_version&gt;-for-rhel-8-x86_64-rpms</td>
<td>Tools for managing hosts with Red Hat Satellite Server that you use.</td>
</tr>
</tbody>
</table>

**Compute node repositories**

The following table lists core repositories for Compute nodes in the overcloud.

<table>
<thead>
<tr>
<th>Name</th>
<th>Repository</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)</td>
<td>rhel-8-for-x86_64-appstream-eus-rpms</td>
<td>Contains Red Hat OpenStack Platform dependencies.</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - High Availability (RPMs)</td>
<td>rhel-8-for-x86_64-highavailability-eus-rpms</td>
<td>High availability tools for Red Hat Enterprise Linux.</td>
</tr>
</tbody>
</table>
### Real Time Compute repositories

The following table lists repositories for Real Time Compute (RTC) functionality.

<table>
<thead>
<tr>
<th>Name</th>
<th>Repository</th>
<th>Description of requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - Real Time (RPMS)</td>
<td>rhel-8-for-x86_64-rt-rpms</td>
<td>Repository for Real Time KVM (RT-KVM). Contains packages to enable the real time kernel. Enable this repository for all Compute nodes targeted for RT-KVM. NOTE: You need a separate subscription to a Red Hat OpenStack Platform for Real Time SKU to access this repository.</td>
</tr>
<tr>
<td>Red Hat Enterprise Linux 8 for x86_64 - Real Time for NFV (RPMS)</td>
<td>rhel-8-for-x86_64-nfv-rpms</td>
<td>Repository for Real Time KVM (RT-KVM) for NFV. Contains packages to enable the real time kernel. Enable this repository for all NFV Compute nodes targeted for RT-KVM. NOTE: You need a separate subscription to a Red Hat OpenStack Platform for Real Time SKU to access this repository.</td>
</tr>
</tbody>
</table>
### Ceph Storage node repositories

The following table lists Ceph Storage related repositories for the overcloud.

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<td>Ansible Engine for Red Hat Enterprise Linux. Used to provide the latest version of Ansible.</td>
</tr>
<tr>
<td>Red Hat OpenStack Platform 16.2 Director Deployment Tools for RHEL 8 x86_64 (RPMs)</td>
<td>openstack-16.2-deployment-tools-for-rhel-8-x86_64-rpms</td>
<td>Packages to help director configure Ceph Storage nodes. This repository is included with standalone Ceph Storage subscriptions. If you use a combined OpenStack Platform and Ceph Storage subscription, use the openstack-16.2-for-rhel-8-x86_64-rpms repository.</td>
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<td>Red Hat OpenStack Platform 16.2 for RHEL 8 (RPMs)</td>
<td>openstack-16.2-for-rhel-8-x86_64-rpms</td>
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### IBM POWER repositories

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<td>Provides Open vSwitch (OVS) packages for OpenStack Platform.</td>
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<td>Core Red Hat OpenStack Platform repository for ppc64le systems.</td>
</tr>
</tbody>
</table>

### 1.11. STREAMLINED CONTAINER BUILD

In Red Hat OpenStack Platform 16.2 the container build has been streamlined. As a result, several containers have been removed:

- registry.redhat.io/rhosp-rhel8/openstack-glance-base
- registry.redhat.io/rhosp-rhel8/openstack-rsyslog-base
- registry.redhat.io/rhosp-rhel8/openstack-panko-base
- registry.redhat.io/rhosp-rhel8/openstack-keystone-base
- registry.redhat.io/rhosp-rhel8/openstack-openvswitch-base
- registry.redhat.io/rhosp-rhel8/openstack-redis-base
- registry.redhat.io/rhosp-rhel8/openstack-placement-base
- registry.redhat.io/rhosp-rhel8/openstack-zaqar-base

### 1.12. PRODUCT SUPPORT

Available resources include:

#### Customer Portal

The Red Hat Customer Portal offers a wide range of resources to help guide you through planning, deploying, and maintaining your Red Hat OpenStack Platform deployment. Facilities available through the Customer Portal include:
Mailing Lists
Red Hat provides these public mailing lists that are relevant to Red Hat OpenStack Platform users:

- The **rhsa-announce** mailing list provides notification of the release of security fixes for all Red Hat products, including Red Hat OpenStack Platform.


1.13. UNSUPPORTED FEATURES
The following features are not supported in Red Hat OpenStack Platform:

- Custom policies, which includes modification of **policy.json** files either manually or through any *Policies* heat parameters. Do not modify the default policies unless the documentation contains explicit instructions to do so.

Containers are not available for the following packages, therefore they are not supported in RHOSP:

- **nova-serialproxy**
- **nova-spicehtml5proxy**

If you require support for any of these features, please contact the Red Hat Customer Experience and Engagement team to obtain a support exception.
CHAPTER 2. TOP NEW FEATURES

This section provides an overview of the top new features in this release of Red Hat OpenStack Platform.

2.1. RED HAT OPENSTACK PLATFORM DIRECTOR

This section outlines the top new features for Red Hat OpenStack Platform director.

**Validation framework output formats**

Red Hat OpenStack Platform contains a validation framework to help verify the requirements and functionality of the undercloud and overcloud. The framework includes new output formats for validation logs:

- **validation_json**
  
The framework saves JSON-formatted validation results as a log file in `/var/log/validations`. This is the default callback for the validation framework.

- **validation_stdout**
  
The framework displays JSON-formatted validation results on screen.

- **http_json**
  
The framework sends JSON-formatted validation results to an external logging server.

Use the `ANSIBLE_STDOUT_CALLBACK` environment variable to set the format that you want with your `openstack tripleo validator run` command:

```
$ openstack tripleo validator run --extra-env-vars ANSIBLE_STDOUT_CALLBACK=<callback> --validation check-ram
```

2.2. BACKUP AND RESTORE

This section outlines the top new features and changes for Backup and Restore components.

**Sequential backup for control plane nodes**

The backup process for control plane nodes now runs sequentially on each node instead of simultaneously on all nodes. Therefore, you can create a backup of the control plane nodes without service disruption to your environment.

2.3. COMPUTE

This section outlines the top new features for the Compute service.

**Memory encryption for instances**

You can configure AMD SEV Compute nodes to provide cloud users the ability to create instances that use memory encryption. For more information, see Configuring AMD SEV Compute nodes to provide memory encryption for instances.

**vGPU resize and cold migration**

Instances with a vGPU flavor are automatically re-allocated the vGPU resources after resize and cold migration operations.

**Image downloads direct from RBD**
When the Image service (glance) uses Red Hat Ceph RADOS Block Device (RBD) as the back end, and the Compute service uses local file-based ephemeral storage, you can configure the Compute service to download images directly from the RBD image repository without using the Image service API. This reduces the time it takes to download an image to the Compute node image cache at instance boot time, which improves instance launch time. For more information, see Configuring image downloads directly from Red Hat Ceph RADOS Block Device (RBD).

2.4. DISTRIBUTED COMPUTE NODES (DCN)

This section outlines the top new features for Distributed Compute Nodes (DCN).

**ML2/OVN support**

In Red Hat OpenStack Platform 16.2, the Modular Layer 2 plug-in with the Open Virtual Network mechanism driver (ML2/OVN) is now fully supported for DCN architectures.

**Exclude RAW images from DCN edge sites**

In Red Hat OpenStack Platform 16.2, you can use the `NovaImageTypeExcludeList` with a value of `raw` to exclude raw images from advertisement on edge sites that do not have Ceph storage. Excluding raw images from sites without storage limits the use of unnecessary network and local storage resources.

**Externally managed Red Hat Ceph Storage at the edge**

With the release of Red Hat OpenStack Platform 16.2, you can now use Red Hat Ceph Storage that is not deployed by Red Hat OpenStack Platform director at your edge site.

2.5. NETWORKING

This section outlines the top new features for the Networking service.

**New Networking service quota driver no longer requires MariaDB resource request locks**

Starting in Red Hat OpenStack Platform (RHOSP) 16.1.7, there is a new quota driver for the RHOSP Networking service (neutron). The Networking service no longer uses global locks, but instead uses MariaDB transaction isolation levels to retrieve used resources and the current resource reservations. This new driver creates a reservation within the same database transaction, provided that the quota is not breached. Because the new transaction both counts the used resources and creates the reservation, this new quota driver is much faster than the previous driver that uses the `make_reservation` transaction. Using the new quota driver, the Networking service is less likely to encounter resource request bottlenecks that can lead to the database locking up.

**ML2/OVN support for routed provider networks**

Starting in Red Hat OpenStack Platform 16.2, you can use the Modular Layer 2 plug-in with the Open Virtual Network mechanism driver (ML2/OVN) to deploy routed provider networks. Routed provider networks (RPNs) are common in edge distributed compute node (DCN) and spine-leaf routed data center deployments. RPNs enable a single provider network to represent multiple layer 2 networks (broadcast domains) or network segments, permitting the operator to present only one network to users. For more information, see Deploying routed provider networks in the Networking Guide.

**Availability zones for ML2/OVS and ML2/OVN**

With the Red Hat OpenStack Platform Networking service you can group nodes in availability zones (AZs). For nodes that run crucial services, you can schedule these nodes for resources with high availability. AZs are supported only for the Modular Layer 2 plug-in with the Open Virtual Network (ML2/OVN) and Open vSwitch (ML2/OVS) mechanism drivers. For more information, see Using availability zones to make network resources highly available in the Networking Guide.
2.6. STORAGE

This section outlines the top new features for the Storage service.

Sparse image upload
With the Image service (glance) API, you can enable sparse image upload to reduce demand on the image storage back end. In sparse images, the Image service does not interpret null byte (empty) sequences as data, therefore only the data itself consumes storage. This feature is particularly useful in distributed compute node (DCN) environments. Sparse image upload also reduces network traffic and improves the image upload speed.

Multiple back ends
By default, a standard Shared File Systems service (manila) deployment environment file has a single back end. With this release, you can configure the Shared File Systems service to use one or more supported back ends.

RBD clone v2 support
With this feature you can delete volumes that have snapshot dependencies.

Image pre-caching
Red Hat OpenStack Platform (RHOSP) director can pre-cache images as part of the glance-api service. With this release, the image pre-cache feature is fully supported.

Configuring an external NFS share for conversion
The Block Storage service (cinder) can now use an external NFS share to perform image format conversion of Image service (glance) images on the overcloud Controller nodes. Using this functionality prevents the space on the node from being completely filled during a conversion operation.

See Configuring an external NFS share for conversion.

Red Hat OpenShift Container Platform support
The Shared File Systems service (manila) with CephFS through NFS fully supports serving shares to Red Hat OpenShift Container Platform through Manila CSI. This solution is not intended for large scale deployments. For important recommendations, see https://access.redhat.com/articles/6667651.

2.7. BARE METAL SERVICE

This section outlines the top new features for the Bare Metal (ironic) service.

Policy-based routing
With this enhancement, you can use policy-based routing for Red Hat OpenStack Platform nodes to configure multiple route tables and routing rules with os-net-config. Policy-based routing uses route tables where, on a host with multiple links, you can send traffic through a particular interface depending on the source address. You can also define route rules for each interface.

2.8. NETWORK FUNCTIONS VIRTUALIZATION

This section outlines the top new features for Network Functions Virtualization (NFV).

Modify kernel args
Red Hat OpenStack Platform 16.2 includes an update to allow you to modify the kernel args on a deployed node.

AMD support for SRIOV and DPDK
Red Hat OpenStack Platform 16.2 includes support for Single Root Input/Output Virtualization (SR-IOV) and Data Plane Development Kit (DPDK) workloads on AMD hosts.

### 2.9. TECHNOLOGY PREVIEWS

This section provides an overview of the top new technology previews in this release of Red Hat OpenStack Platform.

**NOTE**

For more information on the support scope for features marked as technology previews, see [Technology Preview Features Support Scope](#).

**Red Hat OpenStack Platform director operator**

The Red Hat OpenStack Platform (RHOSP) director operator creates a set of custom resource definitions (CRDs) on top of Red Hat OpenShift Container Platform to manage resources normally created by the RHOSP undercloud. CRDs are split into two types for hardware provisioning and software configuration. The operator includes CRDs to create and manage overcloud nets (IPAM), VMSets (for RHOSP Controllers), and BaremetalSets (for RHOSP Computes).

For Technology Preview, the software configuration is accomplished with an OpenStackClient pod by using traditional RHOSP or TripleO interfaces and CLI commands. Work is ongoing to produce a more scalable Heat to Ansible playbook deployment workflow within the RHOSP director operator.

**Transport Layer Security everywhere (TLS-e) now includes memcached**

As a technology preview, you can now configure memcached traffic to be encrypted when you configure TLS-e.

**Timemaster (Precision Time Protocol and Chrony)**

A technology preview is available that supports the use of `timemaster` to configure Precision Time Protocol (PTP) and Chrony in NFV deployments.

**Open vSwitch (OVS) Poll Mode Driver (PMD) Auto Load Balance**

You can use Open vSwitch (OVS) Poll Mode Driver (PMD) threads to perform the following tasks for user space context switching:

- Continuous polling of input ports for packets.
- Classifying received packets.
- Executing actions on the packets after classification.

With this technology preview update, you can modify the following parameters to configure OVS PMD automatic load balance:

- `OvsPmdAutoLb`
- `OvsPmdLoadThreshold`
- `OvsPmdImprovementThreshold`
- `OvsPmdRebalInterval`

See [Configuring OVS PMD Auto Load Balance](#).
CHAPTER 3. RELEASE INFORMATION

These release notes highlight technology preview items, recommended practices, known issues, and deprecated functionality that you should consider when you deploy this release of Red Hat OpenStack Platform.

Notes for updates released during the support lifecycle of this Red Hat OpenStack Platform release appear in the advisory text associated with each update.

3.1. RED HAT OPENSTACK PLATFORM 16.2 GA

These release notes highlight technology preview items, recommended practices, known issues, and deprecated functionality to be taken into consideration when deploying this release of Red Hat OpenStack Platform.

3.1.1. Advisory List

This release includes the following advisories:

RHEA-2021:3483
Release of components for OSP 16.2

RHEA-2021:3485
Red Hat OpenStack Platform 16.2 deployment images

RHEA-2021:3486
Release of containers for OSP 16.2 director operator tech preview

RHSA-2021:3487
Moderate: Red Hat OpenStack Platform 16.2 (etcd) security update

RHSA-2021:3488
Important: Red Hat OpenStack Platform 16.2 (openstack-neutron) security update

RHEA-2021:3489
Release of components for OSP 16.2 - Containers

RHSA-2021:3490
Moderate: Red Hat OpenStack Platform 16.2 (python-django20) security update

3.1.2. Bug Fix

These bugs were fixed in this release of Red Hat OpenStack Platform:

BZ#1690726
Before this update, writing an image to RBD could be very slow. This update improves the process for writing an image to RBD, which improves the time it takes for images to be written to RBD.

BZ#1772531
Typically, when you create an encrypted volume from a snapshot of an encrypted volume, the source volume is the same size or smaller than the destination volume.

In previous releases, if you created an encrypted volume from a snapshot of an encrypted volume, and the destination volume was close to or equal to the size of the source volume, the Block Storage service (cinder) silently truncated the data in the new destination volume.
With this release, the Block Storage service calculates the size of the destination volume to include the current size of the encryption header, which eliminates the data truncation.

BZ#1844372
Before this update, when you resized or migrated an instance that had a vGPU flavor you needed to rebuild the instance manually to re-allocate the vGPU resources. With this update, instances with a vGPU flavor are automatically re-allocated the vGPU resources after resize and cold migration operations.

BZ#1849843
Previously, the Shared File Systems service (manila) API that brings external shares into service management did not check for duplicated export locations. An existing share brought into the service multiple times results in an inconsistent state.
With this release, the API evaluates the export locations of known or existing shares before allowing external shares to be managed, and prevents existing shares from being erroneously brought into the Shared File Systems service again.

BZ#1851051
Before this update, RBD performance was degraded when multiple instances were launched simultaneously. This was due to the Image service (glance) starting multiple threads to perform the same copying operation. This update resolves the issue.

BZ#1851797
This update fixes an Image service (glance) configuration error that prevented users from creating a virtual machine with watchdog by setting flavor metadata.

BZ#1884322
In prior releases, you could not delete snapshots that have snapshot dependencies. With this release, you can delete snapshots that have snapshot dependencies.

BZ#1888105
When multiple storage back ends are configured on the Shared File Systems service (manila), each storage back end might support a different storage protocol. Before this update, the Shared File Systems service scheduler did not consider the storage protocol and capability of the shared storage back ends when deciding where to place them, which caused share provisioning to fail. With this update, the Shared File Systems service scheduler now automatically considers the share type extra specs with the storage protocol, which makes it possible to use the CapabilitiesFilter to compare storage back-end capabilities and provision shares successfully.

BZ#1910508
Before this update, validation results were not logged and validation artifacts were not collected because the permissions required to access the requested logging directory were not granted. This update resolves the issue, and validation results are successfully logged and validation artifacts are collected.

BZ#1913671
The Unisphere for PowerMax REST endpoints have changed from 91 to 92. This update changes how URIs are created, to allow for full coverage of all possible Unisphere REST API endpoints.

BZ#1919855
When an instance is created, the Compute service (nova) sanitizes the instance display name to generate a valid hostname when DNS integration is enabled in the Networking service (neutron). Before this update, the sanitization did not replace periods (‘.’) in instance names, for example, ‘rhel-8.4’. This could result in display names being recognized as Fully Qualified Domain Names (FQDNs) which produced invalid hostnames. When instance names contained periods and DNS integration was enabled in the Networking service, the Networking service rejected the invalid hostname, which resulted in a failure to create the instance and a HTTP 500 server error from the Compute service.
With this update, periods are now replaced by hyphens in instance names to prevent hostnames being parsed as FQDNs. You can continue to use free-form strings for instance display names.

**BZ#1923975**

Before this update, some exceptions were not caught during connections to iSCSI portals, such as failures in `iscsiadm -m session`. This caused `_connect_vol` threads to abort unexpectedly in some failure patterns, which caused subsequent steps to hang while waiting for results from `_connect_vol` threads. This update ensures that any exceptions during connections to iSCSI portals are handled correctly in the `_connect_vol` method, to avoid unhandled exceptions during connecting to iSCSI portals, and unexpected aborts that have no updated thread results.

**BZ#1935154**

This update adds Challenge Handshake Authentication Protocol (CHAP) support to the Dell EMC PowerStore driver. PowerStore can now be used with enabled CHAP as a storage back end.

**BZ#1939394**

Before this update, the NetApp SolidFire driver created a duplicate volume when the API response is lost due to a connection error and the driver retries the API request. This occurred when the SolidFire back end successfully received and processed a create volume operation, but failed to deliver the response back to the driver. This update resolves the issue by:

1. Checking if the volume name already exists in the back end before trying to create it. If a volume is found, an exception is raised and the process is aborted.

2. Checking for volume creation right after a read timeout is detected, to prevent invalid API calls.

3. Adding the `sf_volume_create_timeout` option to the SolidFire driver, to allow users to set the appropriate timeout value for their environment.

**BZ#1942531**

Before this update, execution of the validation package `check-latest-packages-version` was slow. This update resolves the issue.

**BZ#1942717**

This release supports port filtering for the Dell EMC XtremelIO driver for the Block Storage service (cinder).

**BZ#1953749**

Before this update, if PowerStore ports were configured for multiple purposes, such as for iSCSI or Replication, the driver reported that it could find no accessible iSCSI targets. This was because the REST filter was wrong. This update fixes the PowerStore iSCSI targets filtering.

**BZ#1956370**

Before this update, when iSCSI or FC targets, such as ESXi, were not connected to the RHOSP host, the attach volume operation waited until it timed out. With this update, a new option to support ports filtering has been added to the Dell EMC XtremelIO driver for the Block Storage service (cinder).

**BZ#1959853**

Before this update, the validation variable in one code path was referenced but never assigned, which resulted in an unhandled exception during validation. This has been fixed.

**BZ#1960185**

Before this update, Ansible redirected output to all registered non-stdout callback plug-ins by default, which resulted in VF callbacks processing information from other processes that used `ansible runtime`. This issue has been resolved and the output of other processes is no longer stored in the validations logging directory.
This update fixes an issue that caused Networking service (neutron) agents, such as Networking service DHCP, to fail when they tried to create resources in OVN because ML2/OVN prevented RPC workers from connecting the OVN southbound database.

Before this update, the Shared File Systems service (manila) dashboard had dynamic form elements whose names could potentially cause the forms to become unresponsive. This meant that the creation of share groups, share networks, and shares within share networks did not work.

With this update, dynamic elements whose names could be problematic are encoded, which means that creation of share groups, share networks, and shares within share networks functions normally.

The Shared File Systems service (manila) uses the CephFS volume client to communicate with Ceph Storage clusters. Previously, the CephFS volume client package aborted while creating or deleting file systems.

The aborted operations caused the manila-share process within the Shared File Systems service to restart, which caused shares that were being provisioned or deleted to be stuck in creating or deleting states, respectively.

With this release, the CephFS volume client package no longer aborts provisioning or deletion requests, and the manila-share process does not restart during these operations.

This update fixes an issue that caused Networking service (neutron) agents, such as Networking service DHCP, to fail when they tried to create resources in OVN. This was caused by residual data left in the OVN databases when QoS rules were created for floating IPs.

This update eliminates the residual data and fixes the problem.

This update fixes a known issue where the Open Virtual Network (OVN) Metadata service was not available to VM instances bound to an SR-IOV virtual function. The issue did not affect network function but these instances did not receive their SSH keys in the absence of a Metadata service connection.

The metadata service connectivity for SR-IOV ports now functions correctly.

Before this fix, grub2 tooling wrote kernel argument changes to /boot/grub2/grubenv. This file was not available to UEFI boot systems, and caused kernel argument changes not to persist across reboots on UEFI boot nodes.

This fix changes both the /boot/grub2/grubenv file and the /boot/efi/EFI/redhat/grubenv files when you make kernel argument changes. As a result, RHOSP director now applies persistent Kernel argument changes for UEFI boot nodes.

This update fixes an issue that caused Networking service (neutron) agents, such as Networking service DHCP, to fail when they tried to create resources in OVN because ML2/OVN prevented RPC workers from connecting the OVN southbound database.

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This fix changes both the /boot/grub2/grubenv file and the /boot/efi/EFI/redhat/grubenv files when you make kernel argument changes. As a result, RHOSP director now applies persistent Kernel argument changes for UEFI boot nodes.

This release of Red Hat OpenStack Platform features the following enhancements:

This enhancement adds support for Entrust nShield HSM deployment in high availability mode with OpenStack Key Manager (barbican).
Images with null bytes take up a lot of space. With this release, you can enable sparse image upload and save space when you upload images. Sparse image upload is supported only with Ceph RBD.

This enhancement adds the type **HostDomain**. **HostDomain** is the same as **HostAddress** with the added support of the underscore character - RFC1033. Systems such as DomainKeys and service records use the underscore. The Compute service can use the **HostDomain** type to define `live_migration_inbound_addr`.

Red Hat OpenStack Platform 16.2 includes support for Single Root Input/Output Virtualization (SR-IOV) and Data Plane Development Kit (DPDK) workloads on AMD hosts.

This enhancement improves the efficiency, performance, and execution time of deployment and update tasks for environments with a large number of roles. The logging output of the deployment process has been improved to include task IDs for better tracking of specific task executions, which can occur at different times. You can use the task IDs to correlate timing and execution when you troubleshoot executions.

During stack update the **KernelArgs** could be modified or appended. You must perform a reboot of the affected nodes manually.

For example, if the current deployment has the following configuration, it is possible to change `hugepages=64`, or add or remove arguments during the stack update:

```
'KernelArgs: "default_hugepagesz=1GB hugepagesz=1G hugepages=32 intel_iommu=on iommu=pt isolcpus=1-11,13-23"
```

For example:

```
KernelArgs: "default_hugepagesz=1GB hugepagesz=1G hugepages=64 intel_iommu=on iommu=pt isolcpus=1-24"
KernelArgs: "isolcpus=1-11,13-23"
```

**NOTE**

Complete removal of **KernelArgs** during the update is not supported. Also **KernelArgs** could be newly added as well to an existing overcloud node, however the reboot was triggered in this case.

With this enhancement, you can improve the performance of live migrations by using the following new parameters:

- **NovaLiveMigrationPermitPostCopy** - When enabled, the instance is activated on the destination node before migration is complete, and an upper bound is set on the memory that needs to be transferred, which improves the live migration of larger instances. This parameter is enabled by default.

- **NovaLiveMigrationPermitAutoConverge** - When enabled, if an on-going live migration is progressing slowly the instance CPU is throttled until the memory copy process is faster than the instance’s memory writes. This parameter is disabled by default. To enable
**NovaLiveMigrationPermitAutoConverge**, add the following configuration to an environment file:

```yaml
parameter_defaults:
  ComputeParameters:
    NovaLiveMigrationPermitAutoConverge: true
```

**BZ#1926721**

This enhancement improves the performance and application of the `check-latest-packages-version` validation.

**BZ#1926725**

This enhancement adds new validation for `tripleo-latest-packages-version`. This validation checks if the listed `tripleo` packages are up to date with repositories.

**BZ#1938568**

Before this update, the `PluginInstanceFormat` parameter for `collectd` could specify only one of the following values: 'none', 'name', 'uuid', or 'metadata'. After this update, the `PluginInstanceFormat` parameter for `collectd` can now specify more than one value, which results in more information being sent in the `plugin_instance` label of `collectd` metrics.

**BZ#1977392**

With this update, you can use the `openstack undercloud backup` command with the `--db-only` option to create a backup of the database that runs on the undercloud node. You can use that backup to recover the state of the database in the event that it becomes corrupted during the upgrade process.

### 3.1.4. Technology Preview

The items listed in this section are provided as Technology Previews. For further information on the scope of Technology Preview status, and the associated support implications, refer to [https://access.redhat.com/support/offerings/techpreview/](https://access.redhat.com/support/offerings/techpreview/).

**BZ#1825895**

In Red Hat OpenStack Platform 16.2, a technology preview is available that supports Precision Time Protocol (PTP) with Timemaster.

**BZ#1925999**

The Red Hat OpenStack Platform (RHOSP) director Operator creates a set of custom resource definitions (CRDs) on top of Red Hat OpenShift Container Platform to manage resources normally created by the RHOSP undercloud. CRDs are split into two types for hardware provisioning and software configuration. The operator includes CRDs to create and manage overcloud networks, manage IP addresses, create VM sets for RHOSP Controllers, and create bare metal sets for RHOSP Computes.

For Technology Preview, the software configuration is accomplished with an OpenStackClient pod, which uses traditional RHOSP or TripleO interfaces and CLI commands. Work is ongoing to produce a more scalable Heat-to-Ansible playbook deployment workflow within the RHOSP director Operator.

### 3.1.5. Release Notes

This section outlines important details about the release, including recommended practices and notable changes to Red Hat OpenStack Platform. You must take this information into account to ensure the best possible outcomes for your deployment.
For Image Service (glance) image conversion, the `glance-direct` method is not enabled by default. To enable this feature, set `enabled_import_methods` to `[glance-direct,web-download]` or `[glance-direct]` in the `DEFAULT` section of the `glance-api.conf` file. The Image Service must have a staging area when you use the `glance-direct` import method. Set the `node_staging_uri` option in the `DEFAULT` section of the `glance-api.conf` file to `file://<absolute-directory-path>`. This path must be on a shared file system that is available to all Image service API nodes.

The `python-networking-fujitsu` package is not included with RHOSP 16.2.

In this release, EFI bootloader assets for whole-disk images are preserved during deployment, so the shim bootloader is no longer overwritten. This ensures that Secure Boot is switched on after deployment.

Starting with Red Hat Ceph Storage 4, you can enable encryption for all traffic generated by the Ceph daemons over the network. The secure mode setting for messenger v2 encrypts the communication between Ceph daemons and Ceph clients, effecting an end-to-end encryption.

A new `tripleo-heat-templates` parameter can enable the on-wire encryption between daemons and clients. To configure Ceph to enable the on-wire encryption between daemons and clients, add the following lines to the overcloud deployment environment files:

```
parameter_defaults:
  CephMsgrSecureMode: true
```

When configuring bandwidth-aware scheduling of SR-IOV workloads, use the heat parameter, `resource_provider_hypervisors`. This parameter defines a paired list `<network_device>: <hypervisor>`. Ensure that you use a fully qualified domain name (FQDN) to define each hypervisor.

In previous releases, administrators had to add the `ceph` plugin to the `CollectdExtraPlugins` parameter in their custom environment files. With this release, the `ceph` plugin loads automatically on Ceph Storage nodes. Therefore, before you upgrade from Red Hat OpenStack Platform 13 to 16.2, you must remove the `ceph` plugin from the `CollectdExtraPlugins` parameter in your custom environment files.

### 3.1.6. Known Issues

These known issues exist in Red Hat OpenStack Platform at this time:

Starting with Red Hat Enterprise Linux (RHEL) version 8.3, support for the Intel Transactional Synchronization Extensions (TSX) feature is disabled by default. Currently, this causes instance live migration to fail when migrating from hosts where the TSX kernel argument is enabled to hosts where the TSX kernel argument is disabled.

This impact applies only to Intel hosts that support the TSX feature. For more information about the CPUs that are affected by this issue, see [Affected Configurations](#).
For more information, review the following Red Hat Knowledgebase solution Guidance on Intel TSX impact on OpenStack guests.

**BZ#1983748**

In Red Hat OpenStack Platform (RHOSP) deployments that use the Modular Layer 2 plug-in with the Open vSwitch (ML2/OVS) mechanism driver, there is currently a known issue where the Orchestration service (heat) parameter, **NeutronL3AgentAvailabilityZone** does not set the relevant Neutron L3 agent parameter correctly.

Workaround: use a custom hieradata statement to set this value. In the example that follows, replace `[ROLE]` with the composable role name that is appropriate for your site.

**Example**

```yaml
[ROLE]ExtraConfig:
  neutron::agents::l3::availability_zone: role_availability_zone
```

For more information, see Puppet: Customizing hieradata for roles in the Advanced Overcloud Customization guide.

**BZ#1986423**

Rebooting a node with a virtual function (VF) attached to OVS-DPDK (vfio-pci driver) results in VF uninitialized on that physical function (PF). As a result, virtual machines are unable to use the VFs from that PF. If a second VF is used for another OSP network, it will not function as expected after reboot.

Workaround: perform the following steps on the Compute node before you reboot the node:

1. Delete the file `/etc/udev/rules.d/70-os-net-config-sriov.rules`
2. Modify the "Before" criteria of `/etc/systemd/system/sriov_config.service` file to add "network-pre.target" The modified "Before" should look like:

   ```
   Before=network-pre.target openvswitch.service
   ```

The workaround fixes the issue and all the VFs initialize correctly.

**BZ#2003708**

RHOSP does not yet support ML2/OVN with VXLAN networks. The migration process includes steps to convert VXLAN networks to Geneve. When the migration target version is RHOSP 16.2.0, a bug prevents the expected VXLAN to Geneve conversion, and the networks remain configured as VXLAN.

This bug affects only migrations to ML2/OVN on RHOSP 16.2. It does not affect migrations to ML2/OVN on RHOSP 16.1.

**BZ#1855423, BZ#1856901**

There are some known limitations for Mellanox ConnectX-5 adapter cards in VF LAG mode in OVS OFFLOAD deployments, SRIOV Switchdev mode.

You might encounter the following known issues and limitations when you use the Mellanox ConnectX-5 adapter cards with the virtual function (VF) link aggregation group (LAG) configuration in an OVS OFFLOAD deployment, SRIOV Switchdev mode:

- When at least one VF of any physical function (PF) is still bound or attached to a virtual machine (VM), an internal firmware error occurs when attempting to disable single-root input/output virtualization (SR-IOV) and when unbinding PF using a function such as `ifdown`
and ip link.
Workaround: nbind or detach VFs before you perform these actions: . Shut down and detach any VMs. . Remove VF LAG BOND interface from OVS. . Unbind each configured VF: 

```
# echo <VF PCIe BDF> > /sys/bus/pci/drivers/mlx5_core/unbind
```
Disable SR-IOV for each PF: 

```
# echo 0 > /sys/class/net/<PF>/device/sriov_numvfs
```

- When the NUM_OF_VFS parameter configured in the Firmware configuration, using the mstconfig tool, is higher than 64, VF LAG mode while deploying OVS OFFLOAD, SRIOV switchdev mode is not supported. Currently, there is no workaround available.

### 3.1.7. Deprecated Functionality

The items in this section are either no longer supported, or will no longer be supported in a future release.

**BZ#1868673**

For Distributed Compute Node deployments which use storage, dcn-hci.yaml has been renamed to dcn-storage.yaml because DCN sites with storage have the option of not using HCI (Hyper-Converged Infrastructure). dcn-hci.yaml is deprecated but will remain in the environments directory for backwards compatibility. dcn-hci.yaml will be removed in Red Hat OpenStack platform 17. dcn-storage.yaml should be used in place of dcn-hci.yaml.

**BZ#1984484**

Block Storage service (cinder) backup with Google Cloud Storage is being deprecated. Support will be removed in the next major release.

**BZ#1984887**

In this release, Block Storage service (cinder) backup support for Google Cloud Services (GCS) has been deprecated. Support will be removed in Red Hat OpenStack Platform (RHOSP) 17.0.

**BZ#1990802**

In Red Hat OpenStack Platform (RHOSP) 16.2, support for the QXL video model is deprecated, due to the removal of support for the Spice graphics software in RHEL 9. This will cause issues for instances that use QXL when migrating from RHEL-8 to RHEL-9. Red Hat recommends using the virtio video model for both UEFI and BIOS instances, instead of qxl. When creating a new instance from an image, set the video model before launching the new instance:

```
$ openstack image set --property hw_video_model=virtio <image>
```

To update the video model for existing instances that use the QXL video model:

1. Stop the instance.
2. Snapshot the instance.
3. Update the image metadata on the instance snapshot image to include the property hw_video_model=virtio.
4. Create a new instance using the instance snapshot.

For more information on supported video models, see https://access.redhat.com/documentation/en-us/red_hat_openstack_platform/16.2/html/creating_and_managing_images/appx-image-config-parameters.
3.2. RED HAT OPENSTACK PLATFORM 16.2.1 MAINTENANCE RELEASE
- DECEMBER 09, 2021

These release notes highlight technology preview items, recommended practices, known issues, and deprecated functionality to be taken into consideration when deploying this release of Red Hat OpenStack Platform.

3.2.1. Advisory List

This release includes the following advisories:

**RHBA-2021:5067**
Release of components for OSP 16.2

**RHEA-2021:5068**
Red Hat OpenStack Platform 16.2.1 director images bug fix advisory

**RHEA-2021:5069**
Red Hat OpenStack Platform 16.2 containers bug fix advisory

3.2.2. Bug Fix

These bugs were fixed in this release of Red Hat OpenStack Platform:

**BZ#1977442**
Before this update, the ML2/OVN container started, but the service did not work correctly. The cause for this problem was that the ML2/OVN controller container did not include a configuration to support TLS. With this update, the ML2/OVN container configuration has been updated to include all of the correct configuration, and it now works correctly.

**BZ#2005404**
Before this update, the `certmonger` package was dropped from the minimal image, which made it impossible to deploy Red Hat Ceph Storage nodes. With this update, the `certmonger` package has been added back to the image, and Red Hat Ceph Storage nodes can now be deployed.

**BZ#2007268**
Before this update, a lock handling issue prevented IPMI-based nodes from recording the hardware vendor as part of power state synchronization. This issue caused the power state synchronization to fail, and nodes that used the `ipmi` hardware type entered the `Maintenance` state. With this update, the lock is handled correctly and the power state synchronization for bare metal nodes that use the `ipmi` hardware type work correctly and no locking errors occur.

**BZ#2008981**
Before this update, removal of the `python2` packages for the Red Hat Enterprise Linux (RHEL) in-place upgrade tool, LEAPP, was unsuccessful. This failure was caused by a DNF `exclude` option that retained the LEAPP packages. With this update, automation has now been included to ensure that the necessary LEAPP packages are successfully removed.

**BZ#2019178**
Before this update, an upgradable `mariadb-server` package in the RHEL repository caused the package manager to upgrade the `mariadb-server` package on the host, interfering with the containerized `mariadb-server` that pre-exists on the same host. With this update, the Red Hat OpenStack Platform (RHOSP) director removes the `mariadb-server` package from any hosts which also have the containerized MariaDB, and the RHOSP FFU process continues.
3.2.3. Release Notes

This section outlines important details about the release, including recommended practices and notable changes to Red Hat OpenStack Platform. You must take this information into account to ensure the best possible outcomes for your deployment.

BZ#1989820

When configuring bandwidth-aware scheduling of SR-IOV workloads, use the heat parameter, `resource_provider_hypervisors`. This parameter defines a paired list `<network_device>`: `<hypervisor>`. Ensure that you use a fully qualified domain name (FQDN) to define each hypervisor.

BZ#2007255

With this update, the memory limit for the `collectd` container has been increased to 512 MB. When this limit is exceeded, the container is restarted.

3.2.4. Technology Preview

The items listed in this section are provided as Technology Previews. For further information on the scope of Technology Preview status, and the associated support implications, refer to [https://access.redhat.com/support/offerings/techpreview/](https://access.redhat.com/support/offerings/techpreview/).

BZ#1892796

In Red Hat OpenStack Platform (RHOSP) 16.2, a technology preview is available that supports Intel Columbiaville E810 NICs in NFV deployments, with the following recommendations:

- You cannot configure Dynamic Device Personalization (DDP) in the heat template.
- Live migration is unsupported.
- Virtual Function (VF) rate limiting is unsupported in RHOSP 16.

3.2.5. Known Issues

These known issues exist in Red Hat OpenStack Platform at this time:

BZ#1966157

There is a limitation when using ML2/OVN with `network_type geneve` with a Mellanox adapter on a Compute node that has more than one instance on the geneve network. The floating IP of only one of the instances is reachable.

BZ#2003708

RHOSP does not yet support ML2/OVN with VXLAN networks. The migration process includes steps to convert VXLAN networks to Geneve. When the migration target version is RHOSP 16.2.0, a bug prevents the expected VXLAN to Geneve conversion, and the networks remain configured as VXLAN.

This bug affects only migrations to ML2/OVN on RHOSP 16.2. It does not affect migrations to ML2/OVN on RHOSP 16.1.

3.3. RED HAT OPENSTACK PLATFORM 16.2.2 MAINTENANCE RELEASE - 23 MARCH 2022
These release notes highlight technology preview items, recommended practices, known issues, and deprecated functionality to be taken into consideration when deploying this release of Red Hat OpenStack Platform.

### 3.3.1. Advisory List

This release includes the following advisories:

- **RHEA-2022:1002**
  Red Hat OpenStack Platform 16.2.2 (Train) deployment images bug fix advisory

- **RHBA-2022:1001**
  Release of components for Red Hat OpenStack Platform 16.2.2

- **RHSA-2022:1000**
  Moderate: Red Hat OpenStack Platform 16.2 (numpy) security update

- **RHSA-2022:0999**
  Moderate: Red Hat OpenStack Platform 16.2 (openstack-nova) security update

- **RHSA-2022:0998**
  Moderate: Red Hat OpenStack Platform 16.2 (golang-github-vbatts-tar-split) security update

- **RHSA-2022:0997**
  Moderate: Red Hat OpenStack Platform 16.2 (golang-qpid-apache) security update

- **RHSA-2022:0996**
  Moderate: Red Hat OpenStack Platform 16.2 (openstack-neutron) security update

- **RHSA-2022:0995**
  Moderate: Red Hat OpenStack Platform 16.2 (openstack-tripleo-heat-templates) security update

- **RHBA-2022:0994**
  Release of Red Hat OpenStack Platform 16.2 container images

- **RHSA-2022:0993**
  Moderate: Red Hat OpenStack Platform 16.2 (python-oslo-utils) security update

- **RHSA-2022:0992**
  Important: Red Hat OpenStack Platform 16.2 (python-twisted) security update

### 3.3.2. Bug Fix

These bugs were fixed in this release of Red Hat OpenStack Platform:

- **BZ#1956785**
  Before this update, you could only configure the `net_config_override` parameter in `undercloud.conf` to point to a file in JSON format. With this update, you can now configure the `net_config_override` parameter in `undercloud.conf` to point to a file in either YAML or JSON format.

- **BZ#1961237**
  Before this update, the dnsmasq healthcheck failed even when dnsmasq ran correctly. The healthcheck failed because it used the dnsmasq user rather than the root user, and did not have access to the `/proc` files. This resulted in incorrect systemd journal messages and failures when validations were enabled. With this update, the dnsmasq healthcheck is disabled because it is of limited use and it is being phased out in later releases. The dnsmasq container is now marked as healthy as long as it is running.
Before this update, the leapp process failed when the following statements were true:

- The system is deployed with TLS-evverywhere (TLSe).
- The system uses the deprecated authconfig utility to configure authentication on your system.
- The command "leapp answer --section authselect_check.confirm=True" has not been run before triggering the leapp upgrade.

With this update, the leapp process completes successfully without the need to run the command "leapp answer --section authselect_check.confirm=True" before triggering the leapp upgrade command.

Before this update, when creating a snapshot with PowerMaxOS 5978.711, REST experienced a payload response change and caused the device label to modify its format. The underlying data from the solutions enabler changed and no longer contained a colon character (\:). This caused an IndexError exception in the PowerMax Driver:

```
IndexError: list index out of range
```

With this update, the problem is resolved in PowerMaxOS 5978.711 and later.

This update fixes a bug that omitted details from the output of the openstack volume backup list command when the output exceeded 1000 lines.

In cases where high CPU use was monitored in a multi-core system, the calculation for CPU use was inaccurate.

With this update, the calculation of CPU use in a multi-core scenario is now accurate. The latest STF dashboards have been adjusted to incorporate this update.

This update fixes a bug that caused unintended results when converting Dell EMC PERC H755 RAID controller physical disks to non-RAID mode.

The conversion erroneously created RAID-0 virtual disks and moved them to the Online state, consuming a physical disk.

The RAID-0 virtual disks are no longer created during the conversions.

This update fixes a bug that caused some virtual machine (VM) bootup operations to fail when multiple VMs were booted simultaneously from an image.

Previously, the Block Storage service (cinder) GPFS SpectrumScale driver did not correctly detect when the storage back end supported copy-on-write (COW) mode. The driver disabled COW features such as the ability to rapidly create volumes from an image. When booting multiple instances simultaneously from an image, some instances timed out when copying the image to its boot volume.

The GPFS Block Storage service driver now properly detects when the storage back end supports COW mode. You can now spawn multiple VM instances simultaneously.
Before this update, the NFS driver blocked attempts to delete OpenStack Storage snapshots in the error state, which prevented users from removing broken snapshot DB entries. With this update, the restriction is removed so that you can clean up failed snapshots.

This update fixes a bug that prevented connections to the Ceph storage backend with Ceph client release 15.2.0 (Octopus) and later, affecting Red Hat Ceph Storage 5.0 and later. A temporary configuration file generated to enable a Ceph connection did not include a '[global]' section marker. This update adds the '[global]' section marker to the temporary file.

The section marker was introduced in Ceph client release 0.94.0 (Hammer). Starting with the Octopus release, Ceph requires the presence of the marker. This fix is backward compatible to Red Hat Ceph Storage 4.x.

Before this update, missing parameters caused HAproxy logs to not be forwarded when rsyslog was configured using OpenStack Orchestration. With this update, all required parameters are present, which means that HAProxy logs are included in logs collected and forwarded.

This update corrects an error that prevented the proper use of the Block Storage service (cinder) `powermax_port_groups` parameter.

Red Hat OpenStack Platform (RHOSP) does not support the use of a fully qualified domain name (FQDN) as the instance display name in a boot server request. The instance display name is passed from the boot server request to the `instance.hostname` field. Some customers use this unsupported naming in their workflows.

A recent update [1] now sanitizes the `instance.hostname` field. The sanitization steps include replacing periods with dashes, a replacement that makes it impossible to continue using the unsupported FQDN instance display names.

This update provides a temporary workaround for customers who use a fully qualified domain name (FQDN) as the instance display name in a boot server request. It limits the scope of the sanitization to cases where the instance display name ends with a period followed by one or more numeric digits.

If you use FQDN as the instance display name in a boot server request, modify your workflow before upgrading to RHOSP 17.

This update fixes a bug that caused the `metrics_qdr` service to appear in the HAProxy configuration of an Service Telemetry Framework (STF) deployment on a distributed compute node (DCN) node.

This release of Red Hat OpenStack Platform features the following enhancements:

Snapshots are fully supported in the Shared File Systems service (manila) with the CephFS back ends. Users can create and delete point-in-time backups of their shares through snapshots. Cloud administrators can control the quotas of the number or size of snapshots that users can create.

The Block Storage service (cinder) can now use an external NFS share to perform image format
conversion of Image service (glance) images on the overcloud Controller nodes. Using this functionality prevents the space on the node from being completely filled during a conversion operation.
See Configuring an external NFS share for conversion.

BZ#1894668
In a DCN deployment, offline volume migration is supported between an edge site and the central site. Volumes may be migrated from an edge site to the central site, and vice versa. However, offline volume migration directly between two edge sites is not supported.

BZ#1921224
This feature allows DCN environments to perform offline volume migration between central and edge sites.

BZ#1949675
This enhancement enables the experimental rsyslog reopenOnTruncate setting to ensure that rsyslog immediately recognizes when a logrotation happens on a file. The setting affects every service configured to work with rsyslog.
When rsyslog reopenOnTruncate is disabled, rsyslog waits for a log file to fill to its original capacity before consuming any additional logs.

BZ#1969411
Before this update, the Ceph Dashboard could be exposed only on the provisioning network or on a dedicated composable network. Now, Red Hat OpenStack Platform director processes the CephDashboardNetwork parameter to define the frontend network used by operators, and limits access to the Ceph Dashboard and monitoring stack to this network.

BZ#1971545
With this update, you can set QoS maximum bandwidth limit, egress direction rules on hardware-offloaded ports in a ML2/OVS deployment. To set the policy, use the normal QoS policy/rules methods.
The back end uses ip link commands to enforce the policy instead of the normal OVS QoS engine, because the OVS meter action cannot be offloaded. See meter action is not offloaded.

BZ#1977392
With this update, you can use the openstack undercloud backup command with the --db-only option to create a backup of the database that runs on the undercloud node. You can use that backup to recover the state of the database in the event that it becomes corrupted during the upgrade process.

BZ#1984875
Sometimes a leapp actor blocks the leapp process during an upgrade. You can now remove actors with the new, role-specific LeappActorsToRemove parameter.

BZ#1999324
This enhancement updates the default value of the parameter NovaLiveMigrationPermitAutoConverge to enabled. When the parameter is enabled, the instance CPU is slowed down until the memory copy process is faster than the instance’s memory writes when the migration performance is slow and might not complete.

BZ#1999725
You can now deploy the CephFS NFS gateway (ganesha) on the external network instead of the default dedicated StorageNFS network.

BZ#2029943
This release includes an update of the Block Storage service (cinder) driver for HPE storage arrays. With the updated driver you can use the iSCSI protocol with HPE's Primera products for Primera version 4.2 and later.

**BZ#2050154**

Red Hat OpenStack Platform (RHOSP) now supports the correct method of updating OVN. For more information, see [Optional: Updating the ovn-controller container on all overcloud servers](#).

### 3.3.4. Technology Preview

The items listed in this section are provided as Technology Previews. For further information on the scope of Technology Preview status, and the associated support implications, refer to [https://access.redhat.com/support/offerings/techpreview/](https://access.redhat.com/support/offerings/techpreview/).

**BZ#1952060**

With this technology preview update, you can set the following parameters to configure OVS PMD automatic load balance:

- **OvsPmdAutoLb**: Enable/disable the OVS DPDK PMD Auto Load Balance feature. Values: true or false. OVS DPDK uses the default value of false.

- **OvsPmdLoadThreshold**: Set the minimum PMD thread load threshold for OVS DPDK PMD Auto Load Balance feature. Set a value from 0 to 100 to specify the minimum PMD thread load threshold (% of used cycles) of any non-isolated PMD threads when a PMD Auto Load Balance might be triggered.

- **OvsPmdImprovementThreshold**: Set PMD load variance improvement threshold for OVS DPDK PMD Auto Load Balance feature. Set a value from 0 to 100 to specify the minimum evaluated percentage improvement in load distribution across the non-isolated PMD threads that allows a PMD Auto Load Balance to occur.

- **OvsPmdRebalInterval**: Set PMD auto load balancing interval for OVS DPDK PMD Auto Load Balance feature. Set a value from 0 to 20,000 to specify the minimum time (in minutes) between 2 consecutive PMD Auto Load Balancing iterations.

### 3.3.5. Release Notes

This section outlines important details about the release, including recommended practices and notable changes to Red Hat OpenStack Platform. You must take this information into account to ensure the best possible outcomes for your deployment.

**BZ#1978286**

Starting with Red Hat Ceph Storage 4, you can enable encryption for all traffic generated by the Ceph daemons over the network. The secure mode setting for messenger v2 encrypts the communication between Ceph daemons and Ceph clients, effecting an end-to-end encryption.

A new tripleo-heat-templates parameter can enable the on-wire encryption between daemons and clients. To configure Ceph to enable the on-wire encryption between daemons and clients, add the following lines to the overcloud deployment environment files:

```yaml
parameter_defaults:
  CephMsgrSecureMode: true
```
With RHOSP 16.2.2, you can configure your undercloud to support both PXE and iPXE boot modes when your architecture includes both POWER (ppc64le) and x86_64 UEFI nodes. For more information, see Configuring a multiple CPU architecture overcloud.

This update adds the `CollectdContainerAdditionalCapAdd` variable to the deployment tool. This variable is a comma separated list of additional collectd container capabilities. You can use it to add capabilities to the collectd container.

### 3.3.6. Known Issues

These known issues exist in Red Hat OpenStack Platform at this time:

**BZ#1982489**

Disable the advanced-virt-for-rhel-8 repository before you install Red Hat OpenStack Platform (RHOSP) 16.2, update from RHOSP 16.2 to a newer maintenance release, or upgrade from 16.1 to 16.2.

RHOSP hosts do not require the advanced-virt-for-rhel-8 repository. If you do not disable it, dependency issues cause the installation, update, or upgrade to fail. The dependency failures happen because the advanced-virt-for-rhel-8-x86_64-rpms repository is based on RHEL 8.latest, which does not work with RHEL 8.4.

As a workaround, disable the repositories. Perform the steps appropriate for your installation, update, or upgrade scenario.

- Scenario: new 16.2 installation or update from 16.2 to later version of 16.2.
  
  ```
  $ subscription-manager repos --disable advanced-virt-for-rhel-8-x86_64-rpms
  $ dnf module disable -y virt:av
  $ dnf module enable -y virt:rhel
  ```

- Scenario: upgrade from 16.1 → 16.2.
  
  ```
  $ subscription-manager repos --disable advanced-virt-for-rhel-8-x86_64-rpms
  $ dnf module disable -y virt:8.2
  $ dnf module enable -y virt:rhel
  ```

**BZ#1984555**

There is currently a known issue in which the OpenStack `tripleo validator run` command produces errors. In the command output the `Status_by_Host` column contains the value, 'No host matched'. This error occurs with all `openstack validator run` calls because no ansible inventory was available for the undercloud and is not limited to a single validator group. This error also impacts overcloud validations. The root cause of this is a regression in the tripleo client code where `tripleo-ansible-inventory` is no longer called in real time.

As a result, in updates to Red Hat OpenStack Platform (RHOSP) 16.2, the `tripleo validator run --group pre-introspection` command fails on all tests.

Workaround: create a file called inventory.yaml by manually running `tripleo-ansible-inventory --static-yaml-inventory inventory.yaml`. Then, run the validation using the `-i inventory.yaml` argument:
# tripleo-ansible-inventory --static-yaml-inventory inventory.yaml
# openstack tripleo validator run --group pre-introspection -i inventory.yaml

For more information, see the Red Hat Knowledgebase solution openstack tripleo validator run command produces error.

### 3.3.7. Deprecated Functionality

The items in this section are either no longer supported, or will no longer be supported in a future release.

**BZ#2023517**

The collectd plugin write_redis has been deprecated in Red Hat OpenStack Platform (RHOSP) 16.2 and will be removed in RHOSP 17.0.
CHAPTER 4. TECHNICAL NOTES

This chapter supplements the information contained in the text of Red Hat OpenStack Platform "Train" errata advisories released through the Content Delivery Network.

4.1. RHEA-2021:3483 — RELEASE OF COMPONENTS FOR OSP 16.2

Changes to the distribution component:

- The **python-networking-fujitsu** package is not included with RHOSP 16.2. (BZ#1906028)

Changes to the openstack-cinder component:

- Typically, when you create an encrypted volume from a snapshot of an encrypted volume, the source volume is the same size or smaller than the destination volume.  
In previous releases, if you created an encrypted volume from a snapshot of an encrypted volume, and the destination volume was close to or equal to the size of the source volume, the Block Storage service (cinder) silently truncated the data in the new destination volume.

With this release, the Block Storage service calculates the size of the destination volume to include the current size of the encryption header, which eliminates the data truncation. (BZ#1772531)

- Before this update, the NetApp SolidFire driver would create a duplicate volume when the API response is lost due to a connection error and the driver retries the API request. This occurred when the SolidFire back end successfully received and processed a create volume operation, but failed to deliver the response back to the driver. This update resolves the issue by:
  1. Checking if the volume name already exists in the backend before trying to create it. If a volume is found, an exception is raised and the process is aborted.
  2. Checking for volume creation right after a read timeout is detected, to prevent invalid API calls.
  3. Adding the \`sf_volume_create_timeout\` option to the SolidFire driver, to allow users to set the appropriate timeout value for their environment. (BZ#1939394)

- The Unisphere for PowerMax REST endpoints have changed from 91 to 92. This update changes how URIs are created, to allow for full coverage of all possible Unisphere REST API endpoints. (BZ#1913671)

- This update adds Challenge Handshake Authentication Protocol (CHAP) support to the Dell EMC PowerStore driver. PowerStore can now be used with enabled CHAP as a storage back end. (BZ#1935154)

- Before this update, if PowerStore ports were configured for multiple purposes, such as for iSCSI or Replication, the driver reported that it could find no accessible iSCSI targets. This was because the REST filter was wrong. This update fixes the PowerStore iSCSI targets filtering. (BZ#1953749)

- Before this update, when iSCSI or FC targets, such as ESXi, were not connected to the RHOSP host, the attach volume operation waited until it timed out. With this update, a new option to support ports filtering has been added to the Dell EMC XtremiO driver for the Block Storage service (cinder). (BZ#1956370)

Changes to the openstack-glance component:
Before this update, RBD performance was degraded when multiple instances were launched simultaneously. This was due to the Image service starting multiple threads to perform the same copying operation. This update resolves the issue. (BZ#1851051)

This update fixes an Image service (glance) configuration error that prevented users from creating a virtual machine with watchdog by setting flavor metadata. (BZ#1851797)

Changes to the openstack-ironic-python-agent component:

- In this release, EFI bootloader assets for whole-disk images are preserved during deployment, so the shim bootloader is no longer overwritten. This ensures that Secure Boot is switched on after deployment. (BZ#1961784)

Changes to the openstack-manila component:

- Previously, the Shared File Systems service (manila) API that brings external shares into service management did not check for duplicated export locations. An existing share brought into the service multiple times results in an inconsistent state. With this release, the API evaluates the export locations of known or existing shares before allowing external shares to be managed, and prevents existing shares from being erroneously brought into the Shared File Systems service again. (BZ#1849843)

- When multiple storage backends are configured on the Shared File Systems service (manila), each storage back end might support a different storage protocol. Before this update, the Shared File Systems service scheduler did not consider the storage protocol and capability of the shared storage back ends when deciding where to place them, which caused share provisioning to fail. With this update, the Shared File Systems service scheduler now automatically considers the share type extra specs with the storage protocol, which makes it possible to use the `CapabilitiesFilter` to compare storage back end capabilities and provision shares successfully. (BZ#1888105)

Changes to the openstack-manila-ui component:

- Before this update, the Shared File Systems service (manila) dashboard had dynamic form elements whose names could potentially cause the forms to become unresponsive. This meant that the creation of share groups, share networks, and shares within share networks did not work. With this update, dynamic elements whose names could be problematic are encoded, which means that creation of share groups, share networks, and shares within share networks functions normally. (BZ#1974979)

Changes to the openstack-nova component:

- Before this update, when you resized or migrated an instance that had a vGPU flavor you needed to rebuild the instance manually to re-allocate the vGPU resources. With this update, instances with a vGPU flavor are automatically re-allocated the vGPU resources after resize and cold migration operations. (BZ#1844372)

- When an instance is created, the Compute service (nova) sanitizes the instance display name to generate a valid hostname when DNS integration is enabled in the Networking service (neutron). Before this update, the sanitization did not replace periods (\'\.\’) in instance names, for example, ‘rhel-8.4’. This could result in display names being recognized as Fully Qualified Domain Names (FQDNs) which produced invalid hostnames. When instance names contained periods and DNS integration was enabled in the Networking service, the Networking service would reject the invalid hostname resulting in a failure to create the instance and a HTTP 500 server error from the Compute service.
With this update, periods are now replaced by hyphens in instance names to prevent hostnames being parsed as FQDNs. You can continue to use free-form strings for instance display names. (BZ#1919855)

Changes to the openstack-tripleo-heat-templates component:

- This enhancement adds support for Entrust nShield HSM deployment in high availability mode with OpenStack Key Manager (barbican). (BZ#1714772)
- Images with null bytes take up a lot of space. With this release, you can enable sparse image upload and save space when you upload images. Sparse image upload is supported only with Ceph RBD. (BZ#1866741)
- In prior releases, you could not delete resources with dependencies, such as snapshots. With this release, you can delete resources with dependencies. (BZ#1884322)
- For Distributed Compute Node deployments which use storage, `dcn-hci.yaml` has been renamed to `dcn-storage.yaml` because DCN sites with storage have the option of not using HCI (Hyper-Converged Infrastructure). `dcn-hci.yaml` is deprecated but will remain in the environments directory for backwards compatibility. `dcn-hci.yaml` will be removed in Red Hat OpenStack platform 17. `dcn-storage.yaml` should be used in place of `dcn-hci.yaml`. (BZ#1868673)
- This enhancement improves the efficiency, performance, and execution time of deployment and update tasks for environments with a large number of roles. The logging output of the deployment process has been improved to include task IDs for better tracking of specific task executions, which can occur at different times. The task IDs can now be used to correlate timing and execution when troubleshooting executions. (BZ#1897890)
- With this enhancement, you can improve the performance of live migrations by using the following new parameters:
  - **NovaLiveMigrationPermitPostCopy** - When enabled, the instance is activated on the destination node before migration is complete, and an upper bound is set on the memory that needs to be transferred, which improves the live migration of larger instances. This parameter is enabled by default.
  - **NovaLiveMigrationPermitAutoConverge** - When enabled, if an on-going live migration is progressing slowly the instance CPU is throttled until the memory copy process is faster than the instance’s memory writes. This parameter is disabled by default. To enable **NovaLiveMigrationPermitAutoConverge**, add the following configuration to an environment file:

    ```yaml
    parameter_defaults:
    ComputeParameters:
    NovaLiveMigrationPermitAutoConverge: true
    ```

    (BZ#1920229)

Changes to the openstack-tripleo-validations component:

- This enhancement adds new validation for `tripleo-latest-packages-version`. This validation checks if the listed `tripleo` packages are up to date with repositories. (BZ#1926725)

Changes to the puppet-collectd component:

- Before this update, the **PluginInstanceFormat** parameter for `collectd` could specify only one
of the following values: 'none', 'name', 'uuid', or 'metadata'. After this update, the PluginInstanceFormat parameter for collectd can now specify more than one value, which results in more information being sent in the plugin_instance label of collectd metrics. (BZ#1938568)

Changes to the python-glance-store component:

- Before this update, writing an image to RBD could be very slow. This update improves the process for writing an image to RBD, which improves the time it takes for images to be written to RBD. (BZ#1690726)

Changes to the python-networking-ovn component:

- This update fixes an issue that caused Networking service (neutron) agents, such as Networking service DHCP, to fail when they tried to create resources in OVN because ML2/OVN prevented RPC workers from connecting the OVN southbound database. (BZ#1972774)

- This update fixes an issue that caused Networking service (neutron) agents, such as Networking service DHCP, to fail when they tried to create resources in OVN. This was caused by residual data left in the OVN databases when QoS rules were created for floating IPs. This update eliminates the residual data and fixes the problem. (BZ#1978158)

Changes to the python-os-brick component:

- Before this update, some exceptions were not being caught during connections to iSCSI portals, such as failures in iscsiadm -m session. This caused _connect_vol threads to abort unexpectedly in some failure patterns, which caused subsequent steps to hang while waiting for results from _connect_vol threads. This update ensures that any exceptions during connections to iSCSI portals are handled correctly in the _connect_vol method, to avoid unhandled exceptions during connecting to iSCSI portals, and unexpected aborts that have no updated thread results. (BZ#1923975)

Changes to the python-oslo-config component:

- This enhancement adds the type HostDomain. HostDomain is the same as HostAddress with the added support of the underscore character - RFC1033. Systems such as DomainKeys and service records use the underscore. The Compute service can use the HostDomain type to define live_migration_inbound_addr. (BZ#1868940)

Changes to the python-tripleoclient component:

- Before this update, the validation variable in one code path was referenced but never assigned, which resulted in an unhandled exception during validation. This has been fixed. (BZ#1959853)

Changes to the tripleo-ansible component:

- Starting with Red Hat Enterprise Linux (RHEL) version 8.3, support for the Intel Transactional Synchronization Extensions (TSX) feature is disabled by default. Currently, this causes instance live migration to fail when migrating from hosts where the TSX kernel argument is enabled to hosts where the TSX kernel argument is disabled. This impact applies only to Intel hosts that support the TSX feature. For more information about the CPUs that are affected by this issue, see Affected Configurations.

For more information, review the following Red Hat Knowledgebase solution Guidance on Intel TSX impact on OpenStack guests. (BZ#1975240)
In Red Hat OpenStack Platform 16.2, a technology preview is available that supports Precision Time Protocol (PTP) with Timemaster. (BZ#1825895)

Before this fix, grub2 tooling wrote kernel argument changes to /boot/grub2/grubenv. This file was not available to UEFI boot systems, and caused kernel argument changes not to persist across reboots on UEFI boot nodes. This fix changes both the /boot/grub2/grubenv file and the /boot/efi/EFI/redhat/grubenv files when you make kernel argument changes. As a result, RHOSP director now applies persistent Kernel argument changes for UEFI boot nodes. (BZ#1987092)

During stack update the **KernelArgs** could be modified or appended. A reboot of the affected nodes needs to be performed manually. For example, if the current deployment has the following configuration, it is possible to change `hugepages=64`, or add or remove arguments during the stack update:

```
`KernelArgs: "default_hugepagesz=1GB hugepagesz=1G hugepages=32 intel_iommu=on iommu=pt isolcpus=1-11,13-23"
```

For example:

```
KernelArgs: "default_hugepagesz=1GB hugepagesz=1G hugepages=64 intel_iommu=on iommu=pt isolcpus=1-24"
KernelArgs: "isolcpus=1-11,13-23"
```

**NOTE**

Complete removal of **KernelArgs** during the update is not supported. Also **KernelArgs** could be newly added as well to an existing overcloud node, however the reboot would be triggered in this case. (BZ#1900723)

Changes to the validations-common component:

- Before this update, execution of the validation package **check-latest-packages-version** was slow. This update resolves the issue. (BZ#1942531)

- This enhancement improves the performance and application of the **check-latest-packages-version** validation. (BZ#1926721)

- Before this update, validation results were not being logged and validation artifacts were not being collected as the permissions required to access the requested logging directory were not granted. This update resolves the issue, and validation results are successfully logged and validation artifacts are collected. (BZ#1910508)

- Before this update, Ansible redirected output to all registered non-stdout callback plug-ins by default, which resulted in VF callbacks processing information from other processes using *ansible runtime*. This issue has been resolved and the output of other processes is no longer stored in the validations logging directory. (BZ#1960185)

### 4.2. RHSA-2022:0995 – RELEASE OF COMPONENTS FOR OSP 16.2

**Security Fix(es):**

- openstack-tripleo-heat-templates: data leak of internal URL through keystone_auth_token (CVE-2021-4180)
For more details about the security issue(s), including the impact, a CVSS score, and other related information, refer to the CVE page(s) listed in the References section.

**Bug Fix(es):**

- Disable the advanced-virt-for-rhel-8 repository before you install Red Hat OpenStack Platform (RHOSP) 16.2, update from RHOSP 16.2 to a newer maintenance release, or upgrade from 16.1 to 16.2. RHOSP hosts do not require the advanced-virt-for-rhel-8 repository. If you do not disable it, dependency issues cause the installation, update, or upgrade to fail. The dependency failures happen because the advanced-virt-for-rhel-8-x86_64-rpms repository is based on RHEL 8.latest, which does not work with RHEL 8.4.

As a workaround, disable the repositories. Perform the steps appropriate for your installation, update, or upgrade scenario.

- Scenario: new 16.2 installation or update from 16.2 to later version of 16.2.
  
  $ subscription-manager repos --disable advanced-virt-for-rhel-8-x86_64-rpms

  $ dnf module disable -y virt:av

  $ dnf module enable -y virt:rhel

- Scenario: upgrade from 16.1→16.2.
  
  $ subscription-manager repos --disable advanced-virt-for-rhel-8-x86_64-rpms

  $ dnf module disable -y virt:8.2

  $ dnf module enable -y virt:rhel (BZ#2027787)

- Red Hat OpenStack Platform (RHOSP) now supports the correct method of updating OVN. For more information, see *Optional: Updating the ovn-controller container on all overcloud servers.* (BZ#2050154)

- The Block Storage service (cinder) can now use an external NFS share to perform image format conversion of Image service (glance) images on the overcloud Controller nodes. Using this functionality prevents the space on the node from being completely filled during a conversion operation.

  See *Configuring an external NFS share for conversion.* (BZ#1886762)

- Before this update, the leapp process failed when the following statements were true:

  - The system is deployed with TLS-everywhere (TLSe).
  
  - The system uses the deprecated `authconfig` utility to configure authentication on your system.

  - The command "leapp answer --section authselect_check.confirm=True" has not been run before triggering the leapp upgrade.

  With this update, the leapp process completes successfully without the the need to run the command "leapp answer --section authselect_check.confirm=True" before triggering the leapp upgrade command. (BZ#1978228)

- You can now deploy the CephFS NFS gateway (ganesha) on the external network instead of the default dedicated StorageNFS network. (BZ#1999725)

- Before this update, missing parameters caused HAproxy logs to not be forwarded when rsyslog was configured using OpenStack Orchestration. With this update, all required parameters are
present, which means that HAProxy logs are included in logs collected and forwarded. (BZ#2026290)

- This update adds an NTP validation step to deployments. To include the validation step in your deployment, include the argument `--ntp-server <ntp_server_name>` in the `openstack deploy` command. Replace `<ntp_server_name>` with the name of a valid, reachable NTP server. If director cannot reach the specified NTP server, the deployment fails. This validation prevents synchronization failures from occurring later in the deployment. (BZ#2034189)

- This update fixes a bug that caused the `metrics_qdr` service to appear in the HAProxy configuration of an Service Telemetry Framework (STF) deployment on a distributed compute node (DCN) node. (BZ#2038897)

- In Red Hat OpenStack Platform (RHOSP) deployments that use the Modular Layer 2 plug-in with the Open vSwitch (ML2/OVS) mechanism driver, there is currently a known issue where the Orchestration service (heat) parameter, `NeutronL3AgentAvailabilityZone` does not set the relevant Neutron L3 agent parameter correctly. Workaround: use a custom hieradata statement to set this value. In the example that follows, replace `[ROLE]` with the composable role name that is appropriate for your site.

  Example

  ```
  [ROLE]ExtraConfig:
  neutron::agents::l3::availability_zone: role_availability_zone
  ```

  For more information, see Puppet: Customizing hieradata for roles in the Advanced Overcloud Customization guide. (BZ#1983748)

- This update adds the `CollectdContainerAdditionalCapAdd` variable to the deployment tool. This variable is a comma separated list of additional collectd container capabilities. You can use it to add capabilities to the collectd container. (BZ#1984555)

- Sometimes a leapp actor blocks the leapp process during an upgrade. You can now remove actors with the new, role-specific `LeappActorsToRemove` parameter. (BZ#1984875)

- This enhancement updates the default value of the parameter `NovaLiveMigrationPermitAutoConverge` to enabled. When the parameter is enabled, the instance CPU is slowed down until the memory copy process is faster than the instance’s memory writes when the migration performance is slow and might not complete. (BZ#1999324)

- This enhancement enables the experimental `rsyslog reopenOnTruncate` setting to ensure that rsyslog immediately recognizes when a logrotation happens on a file. The setting affects every service configured to work with rsyslog. When `rsyslog reopenOnTruncate` is disabled, rsyslog waits for a log file to fill to its original capacity before consuming any additional logs. (BZ#1949675)

- Before this update, the Ceph Dashboard could be exposed only on the provisioning network or on a dedicated composable network. Now, Red Hat OpenStack Platform director processes the `CephDashboardNetwork` parameter to define the frontend network used by operators, and limits access to the Ceph Dashboard and monitoring stack to this network. (BZ#1969411)

**4.3. RHSA-2022:1001 – RELEASE OF COMPONENTS FOR OSP 16.2**

Changes to the collectd-libpod-stats component:
In cases where high CPU use was monitored in a multi-core system, the calculation for CPU use was inaccurate. With this update, the calculation of CPU use in a multi-core scenario is now accurate. The latest STF dashboards have been adjusted to incorporate this update. (BZ#2006970)

Changes to the openstack-cinder component:

- This update fixes a bug that caused some virtual machine (VM) bootup operations to fail when multiple VMs were booted simultaneously from an image. Previously, the Block Storage service (cinder) GPFS SpectrumScale driver did not correctly detect when the storage back end supported copy-on-write (COW) mode. The driver disabled COW features such as the ability to rapidly create volumes from an image. When booting multiple instances simultaneously from an image, some instances timed out when copying the image to its boot volume.

  The GPFS Block Storage service driver now properly detects when the storage back end supports COW mode. You can now spawn multiple VM instances simultaneously. (BZ#2022018)

- Before this update, when creating a snapshot with PowerMaxOS 5978.711, REST experienced a payload response change and caused the device label to modify its format. The underlying data from the solutions enabler changed and no longer contained a colon character (:). This caused an IndexError exception in the PowerMax Driver:

  ```python
  IndexError: list index out of range
  ```

  With this update, the problem is resolved in PowerMaxOS 5978.711 and later. (BZ#2003762)

- This update fixes a bug that omitted details from the output of the `openstack volume backup list` command when the output exceeded 1000 lines. (BZ#2006556)

- Before this update, the NFS driver blocked attempts to delete OpenStack Storage snapshots in the error state, which prevented users from removing broken snapshot DB entries. With this update, the restriction is removed so that you can clean up failed snapshots. (BZ#2022121)

- This release includes an update of the Block Storage service (cinder) driver for HPE storage arrays. With the updated driver you can use the iSCSI protocol with HPE’s Primera products for Primera version 4.2 and later. (BZ#2029943)

Changes to the openstack-neutron component:

- With this update, you can set QoS maximum bandwidth limit, egress direction rules on hardware-offloaded ports in a ML2/OVS deployment. To set the policy, use the normal QoS policy/rules methods. The back end uses `ip link` commands to enforce the policy instead of the normal OVS QoS engine, because the OVS `meter` action cannot be offloaded. See `meter action is not offloaded`. (BZ#1971545)

Changes to the openstack-tripleo-common component:

- Before this update, the dnsmasq healthcheck failed even when dnsmasq ran correctly. The healthcheck failed because it used the dnsmasq user rather than the root user, and did not have access to the `/proc` files. This resulted in incorrect systemd journal messages and failures when validations were enabled. With this update, the dnsmasq healthcheck is disabled because it is of limited use and it is being phased out in later releases. The dnsmasq container is now marked as healthy as long as it is running. (BZ#1961237)

Changes to the puppet-ironic component:
• With RHOSP 16.2.2, you can configure your undercloud to support both PXE and iPXE boot modes when your architecture includes both POWER (ppc64le) and x86_64 UEFI nodes. For more information, see Configuring a multiple CPU architecture overcloud. (BZ#1982489)

Changes to the puppet-tripleo component:

• This update corrects an error that prevented the proper use of the Block Storage service (cinder) powermax_port_groups parameter. (BZ#2027759)

Changes to the python-dracclient component:

• This update fixes a bug that caused unintended results when converting Dell EMC PERC H755 RAID controller physical disks to non-RAID mode. The conversion erroneously created RAID-0 virtual disks and moved them to the Online state, consuming a physical disk.

  The RAID-0 virtual disks are no longer created during the conversions. (BZ#2010246)

Changes to the python-os-brick component:

• This update fixes a bug that prevented connections to the Ceph storage backend with Ceph client release 15.2.0 (Octopus) and later, affecting Red Hat Ceph Storage 5.0 and later. A temporary configuration file generated to enable a Ceph connection did not include a [global] section marker. This update adds the [global] section marker to the temporary file.

  The section marker was introduced in Ceph client release 0.94.0 (Hammer). Starting with the Octopus release, Ceph requires the presence of the marker. This fix is backward compatible to Red Hat Ceph Storage 4.x. (BZ#2024684)

Changes to the python-tripleoclient component:

• Before this update, you could only configure the net_config_override parameter in undercloud.conf to point to a file in JSON format. With this update, you can now configure the net_config_override parameter in undercloud.conf to point to a file in either YAML or JSON format. (BZ#1956785)

Changes to the tripleo-ansible component:

• With this technology preview update, you can set the following parameters to configure OVS PMD automatic load balance:

  OvsPmdAutoLb: Enable/disable the OVS DPDK PMD Auto Load Balance feature. Values: true or false. OVS DPDK uses the default value of false.

  OvsPmdLoadThreshold: Set the minimum PMD thread load threshold for OVS DPDK PMD Auto Load Balance feature. Set a value from 0 to 100 to specify the minimum PMD thread load threshold (% of used cycles) of any non-isolated PMD threads when a PMD Auto Load Balance might be triggered.

  OvsPmdImprovementThreshold: Set PMD load variance improvement threshold for OVS DPDK PMD Auto Load Balance feature. Set a value from 0 to 100 to specify the minimum evaluated percentage improvement in load distribution across the non-isolated PMD threads that allows a PMD Auto Load Balance to occur.

  OvsPmdRebalInterval: Set PMD auto load balancing interval for OVS DPDK PMD Auto Load Balance feature. Set a value from 0 to 20,000 to specify the minimum time (in minutes) between 2 consecutive PMD Auto Load Balancing iterations. (BZ#1952060)
• With this update, you can use the `openstack undercloud backup` command with the `--db-only` option to create a backup of the database that runs on the undercloud node. You can use that backup to recover the state of the database in the event that it becomes corrupted during the upgrade process. (BZ#1977392)