



Red Hat Enterprise Virtualization 3.6

Release Notes

Release notes for Red Hat Enterprise Virtualization 3.6.

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Abstract

The Release Notes provide high-level coverage of the improvements and additions that have been implemented in Red Hat Enterprise Virtualization 3.6.

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CHAPTER 1. INTRODUCTION

1.1. INTRODUCTION TO RED HAT ENTERPRISE VIRTUALIZATION

Red Hat Enterprise Virtualization is an enterprise-grade server and desktop virtualization platform built on Red Hat Enterprise Linux. There are three core components to a Red Hat Enterprise Virtualization environment:

Red Hat Enterprise Virtualization Manager

A server that manages and provides access to the resources in the environment. This server can be a physical machine or a virtual machine. Moreover, the Manager can be set up as a virtual machine on a host in an environment that the Manager itself manages. This setup is known as a self-hosted engine setup.

Storage

Storage is used to store the data associated with virtual machines in the environment such as the virtual machines themselves and ISO files that can be used to install operating systems or other software on those virtual machines. Storage can be implemented on several storage types, including NFS, iSCSI, GlusterFS, and Fibre Channel.

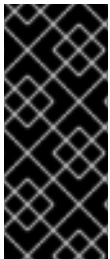
Hosts

Hosts are servers that provide the processing capabilities and memory resources used to run virtual machines. In Red Hat Enterprise Virtualization, servers running Red Hat Enterprise Linux 6 or Red Hat Enterprise Linux 7, or a minimal operating system specifically designed to operate as a host in Red Hat Enterprise Virtualization environments known as the Red Hat Enterprise Virtualization Hypervisor can be used as hosts.

In addition to these core components, Red Hat Enterprise Virtualization allows you to set up supporting components such as a scheduler and remote servers for hosting the databases used in the environment, and take advantages of resources in Red Hat Enterprise Linux OpenStack Platform and VMware environments.

1.2. SUBSCRIPTIONS

To install the Red Hat Enterprise Virtualization Manager and hosts, your systems must be registered with the Content Delivery Network using Red Hat Subscription Management. This section outlines the entitlements and channels required to set up a Red Hat Enterprise Virtualization environment.



IMPORTANT

Red Hat is transitioning the RHN-hosted interface into the Red Hat Subscription Management (RHSM) interfaces by July 31, 2017. If your current systems are registered to RHN Classic, see [Migrating from RHN Classic to Red Hat Subscription Management \(RHSM\) for Red Hat Enterprise Virtualization](#) for instructions on how to migrate your systems to RHSM.

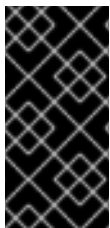
1.2.1. Required Entitlements and Repositories

The packages provided in the following repositories are required to install and configure a functioning Red Hat Enterprise Virtualization environment. When one of these repositories is required to install a package, the steps required to enable the repository are provided in the appropriate location in the

Installation Guide or Self-Hosted Engine Guide.

Table 1.1. Red Hat Enterprise Virtualization Manager

Subscription Pool	Repository Name	Repository Label	Details
Red Hat Enterprise Linux Server	Red Hat Enterprise Linux Server	rhel-6-server-rpms	Provides the Red Hat Enterprise Linux 6 Server.
Red Hat Enterprise Linux Server	RHEL Server Supplementary	rhel-6-server-supplementary-rpms	Provides the virtio-win package, which provides the Windows VirtIO drivers for use in virtual machines.
Red Hat Enterprise Virtualization	Red Hat Enterprise Virtualization	rhel-6-server-rhev-3.6-rpms	Provides the Red Hat Enterprise Virtualization Manager.
Red Hat Enterprise Virtualization	Red Hat JBoss Enterprise Application Platform	jb-eap-6-for-rhel-6-server-rpms	Provides the supported release of Red Hat JBoss Enterprise Application Platform on which the Manager runs.



IMPORTANT

Red Hat Enterprise Virtualization Hypervisor 6 hosts are supported in Red Hat Enterprise Virtualization 3.6 only in clusters with 3.5 compatibility. Clusters with 3.6 compatibility support Red Hat Enterprise Virtualization Hypervisor 7 hosts and Red Hat Enterprise Linux 7 hosts only.

Table 1.2. Red Hat Enterprise Virtualization Hypervisor

Subscription Pool	Repository Name	Repository Label	Details
Red Hat Enterprise Virtualization	Red Hat Enterprise Virtualization	rhel-6-server-rhev-rpms	Provides the rhv-hypervisor package, which includes the image required to install the hypervisor.
Red Hat Enterprise Virtualization	Red Hat Enterprise Virtualization	rhel-7-server-rhev-rpms	Provides the rhv-hypervisor package, which includes the image required to install the hypervisor.

Table 1.3. Red Hat Enterprise Linux 7 Hosts

Subscription Pool	Repository Name	Repository Label	Details
Red Hat Enterprise Linux Server	Red Hat Enterprise Linux Server	rhel-7-server-rpms	Provides the Red Hat Enterprise Linux 7 Server.
Red Hat Enterprise Virtualization	Red Hat Enterprise Virtualization Management Agents (RPMs)	rhel-7-server-rhev-mgmt-agent-rpms	Provides the QEMU and KVM packages required for using Red Hat Enterprise Linux 7 servers as virtualization hosts.



IMPORTANT

Red Hat Enterprise Linux 6 hosts are supported in Red Hat Enterprise Virtualization 3.6 only in clusters with 3.5 compatibility. Clusters with 3.6 compatibility support Red Hat Enterprise Linux 7 hosts and Red Hat Enterprise Virtualization Hypervisor 7 hosts only.

Table 1.4. Red Hat Enterprise Linux 6 Hosts

Subscription Pool	Repository Name	Repository Label	Details
Red Hat Enterprise Linux Server	Red Hat Enterprise Linux Server	rhel-6-server-rpms	Provides the Red Hat Enterprise Linux 6 Server.
Red Hat Enterprise Linux Server	Red Hat Enterprise Linux 6 Server - Optional	rhel-6-server-optional-rpms	Provides the sanlock package and sanlock-related packages required for using Red Hat Enterprise Linux 6 servers as virtualization hosts.
Red Hat Enterprise Virtualization	Red Hat Enterprise Virtualization Management Agents (RPMs)	rhel-6-server-rhev-mgmt-agent-rpms	Provides the QEMU and KVM packages required for using Red Hat Enterprise Linux 6 servers as virtualization hosts.

1.2.2. Optional Entitlements and Repositories

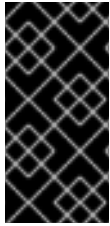
The packages provided in the following repositories are not required to install and configure a functioning Red Hat Enterprise Virtualization environment. However, they are required to install packages that provide supporting functionality on virtual machines and client systems such as USB redirection and virtual machine resource monitoring. When one of these repositories is required to install a package, the steps required to enable the repository are provided in the appropriate location in the *Installation Guide* or *Self-Hosted Engine Guide*.

Table 1.5. Optional Entitlements and Repositories

Subscription Pool	Repository Name	Repository Label	Details
Red Hat Enterprise Linux Server	RHEL Server Supplementary (v. 6 64-bit x86_64)	rhel-6-server-supplementary-rpms	Provides the spice-usb-share and kmod-kspiceusb-rhel60 packages for Red Hat Enterprise Linux 6, which enables USB redirection (legacy mode) on Red Hat Enterprise Linux 6 clients.
Red Hat Enterprise Linux Server	RHEL Supplementary EUS (v. 5.9.z for 64-bit x86_64)	rhel-5.9.z-server-supplementary-rpms	Provides the spice-usb-share and kmod-kspiceusb-rhel5u6 packages for Red Hat Enterprise Linux 5, which enables USB redirection (legacy mode) on Red Hat Enterprise Linux 5 clients.
Red Hat Enterprise Linux Server	Red Hat Enterprise Linux 7 Server - RH Common (v.7 Server for x86_64)	rhel-7-server-rh-common-rpms	Provides the rhvm-guest-agent-common package for Red Hat Enterprise Linux 7, which allows you to monitor virtual machine resources on Red Hat Enterprise Linux 7 clients.
Red Hat Enterprise Linux Server	Red Hat Enterprise Virt Agent (v.6 Server for x86_64)	rhel-6-server-rhev-agent-rpms	Provides the rhvm-guest-agent-common package for Red Hat Enterprise Linux 6, which allows you to monitor virtual machine resources on Red Hat Enterprise Linux 6 clients.
Red Hat Enterprise Linux Server	Red Hat Enterprise Virt Agent (v.5 Server for x86_64)	rhel-5-server-rhev-agent-rpms	Provides the rhvm-guest-agent package for Red Hat Enterprise Linux 5, which allows you to monitor virtual machine resources on Red Hat Enterprise Linux 5 clients.

CHAPTER 2. RHEV FOR IBM POWER

In Red Hat Enterprise Virtualization 3.6, you can install Red Hat Enterprise Linux 7 hosts on IBM POWER8 little endian hardware, and install Red Hat Enterprise Linux 7 virtual machines on emulated IBM POWER8 hardware.



IMPORTANT

Previous releases of RHEV for IBM Power required Red Hat Enterprise Linux hosts on POWER8 hardware to be installed from an ISO image. These hosts cannot be updated to be used with Red Hat Enterprise Virtualization 3.6. You must reinstall Red Hat Enterprise Linux 7 hosts using the repositories outlined below.

The packages provided in the following repositories are required to install and configure aspects of a Red Hat Enterprise Virtualization environment on POWER8 hardware.

Table 2.1. Required Entitlements and Repositories

Component	Subscription Pool	Repository Name	Repository Label	Details
Red Hat Enterprise Virtualization Manager	Red Hat Enterprise Virtualization for IBM Power	Red Hat Enterprise Virtualization for IBM Power	rhel-6-server-rhev-3.6-power-rpms	Provides the Red Hat Enterprise Virtualization Manager for use with the Red Hat Enterprise Virtualization 3.6 for IBM Power release. To use the Manager with POWER8 hosts and virtual machines prior to the release of Red Hat Enterprise Virtualization 3.6, enable this repository instead of the rhel-6-server-rhev-3.6-rpms repository. The Manager itself must be installed on x86_64 architecture.
Red Hat Enterprise Linux 7 hosts, little endian	Red Hat Enterprise Linux for Power, little endian	RHEV Management Agent for IBM Power, little endian	rhel-7-server-rhev-mgmt-agent-for-power-le-rpms	Provides the QEMU and KVM packages required for using Red Hat Enterprise Linux 7 servers on IBM Power (little endian) hardware as virtualization hosts.

Component	Subscription Pool	Repository Name	Repository Label	Details
	Red Hat Enterprise Linux for Power, little endian	Red Hat Enterprise Linux for IBM Power, little endian	rhel-7-for-power-le-rpms	Provides additional packages required for using Red Hat Enterprise Linux 7 servers on IBM Power (little endian) hardware as virtualization hosts.
Red Hat Enterprise Linux 7 virtual machines, big endian	Red Hat Enterprise Linux for Power, big endian	RHEV Tools for IBM Power	rhel-7-server-rhev-tools-for-power-rpms	Provides the rhvm-guest-agent-common package for Red Hat Enterprise Linux 7 virtual machines on emulated IBM Power (big endian) hardware. The guest agents allow you to monitor virtual machine resources on Red Hat Enterprise Linux 7 clients.
Red Hat Enterprise Linux 7 virtual machines, little endian	Red Hat Enterprise Linux for Power, little endian	RHEV Tools for IBM Power, little endian	rhel-7-server-rhev-tools-for-power-le-rpms	Provides the rhvm-guest-agent-common package for Red Hat Enterprise Linux 7 virtual machines on emulated IBM Power (little endian) hardware. The guest agents allow you to monitor virtual machine resources on Red Hat Enterprise Linux 7 clients.

Unsupported Features

The following Red Hat Enterprise Virtualization features are not supported:

- Hot-plug CPU
- SPICE display
- SmartCard
- Sound device

- Guest SSO
- Integration with OpenStack Networking (Neutron), OpenStack Image (Glance), and OpenStack Volume (Cinder)
- Self-hosted engine
- Red Hat Enterprise Virtualization Hypervisor hosts

For a full list of bugs that affect the RHEV for IBM Power release, see https://bugzilla.redhat.com/show_bug.cgi?id=1201513.

CHAPTER 3. RELEASE NOTES

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 Enterprise Virtualization.

3.1. ENHANCEMENTS

This release of Red Hat Enterprise Virtualization features the following enhancements:

BZ#[906927](#)

With this update, support for CPU quality of service has been added.

BZ#[1101577](#)

Red Hat Enterprise Virtualization 3.6 supports virtio-blk data plane, a QEMU feature that increases performance in heavy I/O scenarios. This allows virtual machines to be configured with additional QEMU threads on the host to offload disk I/O processing from the main emulation thread. The recommended number of threads varies, but is a trade-off between additional threads overhead (increasing the load on the hypervisor in general) and offloading benefits on per-disk basis (heavy I/O virtual machines would benefit most). Note, virtio-blk data plane must be configured per virtual machine for all disks.

This feature is not supported for the virtio-scsi interface.

BZ#[1217106](#)

The self-hosted engine setup work flow has been improved. By using the RHEV-M Virtual Appliance instead of the traditional operating system installation for the Manager virtual machine, the setup time now takes less than 10 minutes (excluding the RPM download time).

BZ#[1132487](#)

The Hosts Heatmap Report was added to this release of Red Hat Enterprise Virtualization. This report shows a heat map of the average utilization of CPU and memory on selected hosts over a specified time period, providing a visual view of CPU and memory status over time.

BZ#[1100201](#)

When updating the Manager, any package that cannot be rolled back to a previous version is now listed in detail so the user can better evaluate whether to proceed.

BZ#[1190853](#)

HPE Superdome X servers support using the HPE BladeSystem power management agent. To enable power management on a Superdome X or a HPE

C7000 blade, in the Administration Portal, use the add hosts or edit hosts dialog, and select 'hpblade' as the fence agent type. In the SSH Port field enter the blade bay number for a C7000 blade or, for Superdome X, the partition number you want to control. To use SSH, add `secure=1` in the Options field. This is not required for telnet. Also add the command prompt to the Options field; for use with SSH the Options field would contain `"secure=1,cmd_prompt=[prompt]"`.

BZ#1157377

This update adds support for integration with Red Hat Satellite 6.1.x, providing the ability to receive information on errata for hosts, virtual machines, and the Red Hat Enterprise Virtualization Manager in a Red Hat Enterprise Virtualization environment.

BZ#1160731

Previously, it was only possible to import NFS export domains. Now, it is possible to import Gluster and PosixFS export domains, as well as, NFS export domains.

BZ#1101297

With this release, Self-Hosted Engine setup can be fully automated by using the RHEV-M Virtual Appliance and dynamically configuring it with cloud-init.

BZ#1206231

VDSM in Red Hat Enterprise Virtualization 3.6 no longer supports Red Hat Enterprise Linux 6. In this bug, el6 support was removed from the `vdsm.spec` file to reduce the maintenance required.

BZ#952703

Virtual machines can now be imported from VMware using the Administration Portal graphical user interface. VMware providers can be added in the 'External Providers' dialog, and virtual machines imported using the 'Import' dialog.

BZ#609689

It is now possible to refresh LUN sizes in existing storage domains so that resized LUNs are properly represented in the Manager.

BZ#1107512

With this release, virtual machines can be pinned to more than one host. A virtual machine that is pinned to multiple hosts cannot be live migrated, but can be made highly available between the specified hosts. The virtual machine cannot run on any other hosts in the cluster, even if all of the specified hosts are unavailable.

-

BZ#1261595

Red Hat Enterprise Virtualization Manager now provides support for Sun Proxy server with the RFC-2307 schema extension.

BZ#1063343

This feature reports RX/TX byte statistics for host NICs and virtual machine NICs. In the Administration Portal, the Network Interfaces tab of hosts and virtual machines shows statistics for Rx Rate, Tx Rate, Total Rx, Total Tx, and Drops. The REST API (`api/hosts/<host id>/nics/<nic id>/statistics`) returns statistics for `data.current.rx`, `data.current.tx`, `data.total.rx`, `data.total.tx`, `errors.total.rx`, and `errors.total.tx`. The drops/errors statistics allow you to check the NIC's health and avoid errors associated with NICs experiencing network issues.

BZ#1139795

Previously, to make an update to the Manager virtual machine configuration, you needed to update the configuration files on all self-hosted engine hosts. With this enhancement, the information is stored on the shared storage domain and the configuration only needs to be updated once.

BZ#1153278

With this update, users can now deploy self-hosted engine environments using fibre channel storage domains.

BZ#983019

Previously, there was no way to disable the file transfer feature supported by the SPICE console. In this release, the feature can be disabled on a per virtual machine basis from the Administration Portal.

BZ#974510

Previously, when a user was connected to a SPICE console via a SPICE proxy, the console connection would drop during virtual machine migration. This happened because the client machine was not able to connect to the display on the destination host machine. Now, for both SPICE and VNC, console access is not interrupted.

Note the following limitations:

1. On virtual machines where both displays (SPICE and VNC) are configured, the console connection persists only when using SPICE, and will otherwise fail.

2. Uninterrupted console access only works with remote-viewer and plugins. It does not work with integrated web-based clients (noVNC and SPICE HTML5) or with third-party VNC viewers.

BZ#1152989

Previously, when adding a permission via the REST API the user had to specify the role identifier and not the role name. This meant that the user needed to look up the identifier, issuing an additional call to the top level 'roles' collection. Roles have human readable names, such as UserVmManager, but the REST API did not support specifying these names. Now, the REST API supports both ways to specify a role. This is also supported by the Python SDK, the Java SDK, and the RHEVM Shell.

BZ#1182247

Red Hat Enterprise Virtualization supports virtual machines with up to 240 vCPUs. The previous version supported a maximum of 160 vCPUs.

BZ#878129

Previously, after a query was entered into the search query box the query would disappear when a user switched tabs then returned to the original tab, as there was no infrastructure to store the query. Now, the query in the search query box will be retained after switching tabs.

BZ#1150073

When a self-hosted engine is unable to connect to the high availability daemon it now prints an error message instead of a stack trace.

BZ#1061081

With this update the NTP service can now be configured to not start automatically after a manual or autoinstall as the ntpd package provides ntp.conf with pre-configured servers which are invalid for Red Hat Enterprise Virtualization Hypervisor deployments without internet access. This update allows users to use ntp=off in grub or autoinstall to disable the NTP daemon. To re-enable the NTP daemon users must use the the text user interface (TUI) to set a non-default NTP server, such as an internal NTP server.

BZ#1113664

When performing migrations, numbered left and right arrows now indicate incoming and outgoing migrations in the 'Hosts' tab.

BZ#1077235

This release adds a progress bar to the image uploader tool.

BZ#1084117

With this release, virtual machine permissions have been adjusted to be more specific. Previously, VM_BASIC_OPERATIONS allowed a user to run, stop, shut down, pause, and hibernate the virtual machine. Now, REBOOT_VM, STOP_VM, SHUT_DOWN_VM, PAUSE_VM, HIBERNATE_VM, and RUN_VM can each be separately assigned.

BZ#957608

Normally, the latest client tools are attached to a Windows virtual machine when it is started. However, if a virtual machine is running for a long period of time, updates will not be applied automatically. A notification has been added to the Red Hat Enterprise Virtualization Manager to indicate the availability of new client tools for Windows virtual machines. If there are new client tools available, an exclamation mark will show beside the virtual machine status icon. The updates take effect at virtual machine reboot.

BZ#1159420

Previously, if a virtual machine had a virtio-scsi passthrough disk on a direct LUN, VDSM/QEMU had no way of knowing if the LUN had a reservation request against it. The virtual machine then was not prevented from being migrated, thus losing access to the disk. Now, you can mark a direct LUN as having SCSI reservation, which prevents migration of that virtual machine.

BZ#1179901

With this release, you can now import block storage domains using the REST API.

BZ#803251

With this release, the Virtual Machines main tab has been improved to show more detailed data about CPU, memory, and network usage. Instead of a simple bar it now shows historical data and trends.

BZ#1249639

The provider for the 'internal' user domain has been replaced with the AAA-JDBC extension, which is now installed by default. Upgrading a Red Hat Enterprise Virtualization environment will convert the legacy provider and preserve the 'admin@internal' password. For new installations, the 'admin@internal' password is still set during engine-setup.

BZ#1256730

Previously, if a virtual machine was pinned to a host, you could not select the Highly Available check box for that virtual machine as high

availability would not be able to operate properly. With Red Hat Enterprise Virtualization 3.6, multiple host pinning is supported and the rule has been updated to allow the Highly Available check box to be selected for virtual machines that are not pinned, pinned to any host (migration disabled, but can be started on any host), or pinned to multiple hosts. Note that in the last scenario, if all pinned hosts are down, the virtual machine won't have a host to start on.

BZ#1099412

This release adds the ability to edit the connection details of ISO and Export storage domains.

BZ#1184164

With this update websocket proxy configuration values are now validated to prevent misconfiguration.

BZ#840114

Kernel SamePage Merging (KSM) can now be configured to obey or ignore Non-Uniform Memory Access (NUMA) topology constraints in the Red Hat Enterprise Virtualization Manager. KSM can now either merge pages across the whole machine, ignoring NUMA topology, or merge pages only inside NUMA nodes while obeying the NUMA boundaries.

BZ#1201327

Previously, the Red Hat Enterprise Virtualization Manager only allowed a maximum of 4000GB of memory per virtual machine. Now, the Red Hat Enterprise Virtualization Manager can configure up to 4TB of memory per virtual machine.

BZ#1009009

With this update, the existing notifier filter mechanism has been extended to provide support for severities in an extra, optional field:

```
PATTERN=include|exclude:event[:severity][(subscriber)]
```

The parser accepts the previous format for backward compatibility.

An 'include' filter matches events with greater-or-equal severity. An 'exclude' filter matches events with lesser-or-equal severity.

BZ#1048976

With this update, users can now edit the name of virtual disks attached to a virtual machine in the New VM window when creating a virtual machine based on a template. This allows users to specify names that are different to those specified for the disks attached to the template.

BZ#890517

With this update, `glusterVolumeProfileInfo` is now supported as part of the Gluster profile support.

BZ#857087

With this release, the menu File->USB device selection is disabled on Windows client machines if `usbclerk` is not running and `usbdm` is not installed. For Spice `usbredir` to work, it is required that either `usbclerk` is running or `usbdm` is installed (or both). When it is known that `usbredir` will fail, it is better and clearer to the user to disable it.

BZ#1177800

Previously, using multipath IO, each device was represented as physical devices (`/dev/sdx`) mapped together. Now, instead of showing each physical device, the LUN list provided during deployment shows the GUID of the multipath device.

BZ#1225368

The communication between the Red Hat Enterprise Virtualization Manager and hosts has been improved. An event-based mechanism now communicates changes in virtual machine statuses instead of polling. This significantly reduces latency and network bandwidth. The improvement is especially noticeable in large-scale environments where hosts or data centers are remote, or connected over a slow connection.

BZ#122532

A new domain 'Statistics Hourly Domain' for ad hoc reports has been added in addition to the 'Statistics Daily Domain'. With this update, users can now create more detailed ad hoc reports based on hourly statistics data.

BZ#1123391

Red Hat Enterprise Virtualization supports virtual machines with up to 240 vCPUs. The previous version supported a maximum of 160 vCPUs.

BZ#1110919

Users can now specify custom locations for database backups using an answer file generated by `engine-setup` that includes the following default key/value.

engine:

`OVESETUP_CONFIG/engineDbBackupDir=str:/var/lib/ovirt-engine/backups`

dwh:

OVESETUP_DWH_CONFIG/dwhDbBackupDir=str:/var/lib/ovirt-engine-dwh/backups

reports:

OVESETUP_REPORTS_CONFIG/reportsDbBackupDir=str:/var/lib/ovirt-engine-reports/backups

Users can edit these values to specify alternate file paths, which will be used by engine-setup when the '--config-append' option is added.

BZ#1139793

Previously, every host in a self-hosted engine environment stored a configuration file for the self-hosted engine virtual machine. As a result, any change to the configuration required users to update the file on each host. Now, a single self-hosted engine configuration file is saved on shared storage, and can be accessed by all hosts.

BZ#1163365

With this release, role-bearing network interfaces must have IP configuration, to ensure that they can function as is expected from their role. Red Hat Enterprise Virtualization Manager will no longer allow configuring role-bearing NICs with no means to actualize the role function.

BZ#869804

This release adds SR-IOV enablement to the user interface. In order to connect a vNIC directly to a Virtual Function of an SR-IOV-enabled NIC, the vNIC's profile must be marked as a "passthrough" one. The properties that must be configured on the Virtual Function are taken from the vNIC's profile/network (vlan tag). Each SR-IOV-enabled host-NIC must have a defined set of networks that it is allowed to service. When starting the virtual machine, its vNIC will be directly connected to one of the free Virtual Functions on the host. Note that not all Physical Functions are equivalent: the vNIC must be connected via a host-NIC that has the vNIC's network as one of its allowed networks.

BZ#1232584

With this release, Windows 10 is supported as a guest operating system in Red Hat Enterprise Virtualization.

BZ#1112332

The Affinity Rules Enforcement Manager has been added to check for broken affinity and anti-affinity policies and migrate virtual machines if necessary.

BZ#1108341

Previously, when manually deploying a hosted engine, deployment would fail if the admin password provided in the hosted-engine setup on the host did not match the admin password provided in the engine-setup on the virtual machine. Now, the user will be prompted again until the passwords match.

BZ#1012881

This release adds prefix format support. Both netmask and prefix format are now supported in the netmask field of static IP configuration.

BZ#1120780

Users can now add an answerfile entry to enable automatic shutdown of a virtual machine at the end of the hosted engine deployment process. This allows for full automation of the process.

BZ#1259601

Running engine-setup now checks the expiration date of relevant certificates (including the internal CA certificate and those signed by it) and asks the user whether to renew any certificate that has expired, or is close to expiring. If the user selects 'Yes', those certificates are renewed; 'No' will not alter anything.

BZ#1043226

Host Network QoS adds the ability to configure QoS for networks on a host, enabling control of specific network traffic through the physical interfaces.

BZ#1136329

This feature introduces new REST API resources for a better way to manage networks. Network related tasks like removing unmanaged networks, attaching new networks, and creating bonds are now easier using the new 'HostSetupNetworks' and 'NetworkAttachment' entities.

BZ#1186812

It is now possible to use the REST API to define specific credentials to each iSCSI target per host by sending a POST request to `'/api/hosts/{%host_id%}/storageconnectionextensions'`.

BZ#1128426

With this release, the German translation has been reworked and improved.

BZ#1108153

A new user role 'VmImporterExporter' is now available. The role allows users to export and import virtual machines in the Administration Portal. The 'DataCenterAdmin' permission is no longer required for performing such actions.

BZ#1157362

This release introduces the Host Upgrade Manager, which notifies the user of available updates to hosts and automates the process of moving the host to maintenance mode, applying updates, and reactivating the host.

BZ#1168576

When creating a template, users can now set the format of the template's disk volumes on creation. This enables users to define disks in the thin provisioning QCOW2 format.

BZ#1016839

This release introduces the Host Upgrade Manager, a set of tools that notifies administrators of available updates to a host, and automates the process of putting the host into maintenance mode, updating its packages, and bringing it back to an Up state.

BZ#664030

With this release, it is now possible to customize the system UUID of virtual machines.

BZ#1205663

With this release, users can override the RHEVM Appliance's default memory value during hosted-engine deployment.

BZ#1153417

Red Hat Enterprise Virtualization Hypervisor users can now configure the logrotate interval and maximum size via automated installation options. The parameters can be used together or separately. If used separately, the default value for 'logrotate_max_size' is '1024' and the default value for 'logrotate_interval' is 'daily'.

BZ#1251025

Hosts can now be marked as Foreman/Satellite hosts in the 'Edit Hosts' window after they have been added to the Red Hat Enterprise Virtualization Manager. You can choose a Foreman/Satellite provider for the host when you select the 'Use Foreman/Satellite' check box.

BZ#1140763

Error reporting in the ovirt-optimizer result report has been improved. It now differentiates between errors when there is no solution, no such cluster, and an empty solution.

BZ#1126206

File-type storage domains now use separate IOProcess instances. This improves performance, and prevents one slow or unreachable storage domain from affecting other storage domains.

BZ#1195167

Previously, the REST API for virtual machine pools creation was limited. Now, the REST API for virtual machine pools creation has been extended to enable configuration of all virtual machine properties on pool level.

BZ#1065936

This release adds remote-viewer support for proxy authentication. With this update, SPICE can connect via a proxy that requires authentication (such as user name and password) in order to allow only authenticated users to connect via the proxy. As a result, when remote-viewer is configured to use a proxy requiring user authentication, the SPICE client passes authentication information to the proxy, and users connecting with the proxy are authenticated.

BZ#902185

This release adds support for Korean to the Administration Portal and User Portal.

BZ#877224

With this release, engine-setup notifies the user of the availability of the Reports and Data Warehouse components. These components are not required by all users, so are not installed by default; instead, the installer advertises their availability so that the user can choose whether or not to install them.

BZ#1166755

With this update, default options have now been added for the Drac7 fencing agent, allowing it to function without the need for prior manual configuration.

BZ#678977

With this release, you can give a reason when moving a host to maintenance mode. In some cases, it can be of benefit to see why hosts are in maintenance. On the cluster level, you can set whether you want

to be asked for the maintenance reason. If you set it to true (select the check box), you will see a Reason field when moving a host to maintenance.

BZ#1077850

With this release, you can deploy the Self-Hosted Engine with a virtual appliance image instead of an operating system ISO image.

BZ#1116469

Previously, after a power outage or another disruptive event, the `hosted-engine.lockspace` file refused to accept new connections, and virtual machines failed to start. The `--reinitialize-lockspace` command line option has been added to the `hosted-engine` command, which reinitializes the `sanlock` lockspace file and wipes all locks. This option is available only in clusters in global maintenance mode with all high availability agents shut down. Additionally, the `--force` option can be used with the `--reinitialize-lockspace` option to override the safety checks, but should be only used with caution.

BZ#1208780

Users can now perform maintenance tasks on a RHEV-H self-hosted engine through the text user interface (TUI) without entering the rescue shell.

BZ#1176555

This release adds support for fencing policy per cluster to the REST API. Clusters retrieved from REST will now have a `<fencing_policy>` section.

BZ#1231121

UsbDk has been added to Red Hat Enterprise Virtualization as a preferred alternative to `usbclerk`. UsbDk is a filter driver that allows Windows guest virtual machines access to the client USB devices through SPICE client (`remote-viewer`).

BZ#1211532

With this release, hosted engine setup auto-detects available Appliance images and suggests them for use during installation.

BZ#1083025

With this release, Gluster storage can be used as a data domain on the Self-Hosted Engine.

BZ#1111253

The `global` configuration operation has been added to the `engine-config`

The graceful shutdown operation has been added to the engine config tool with the name `VmGracefulShutdownTimeout`. This configures the length of time, in seconds, the virtual machine will wait before it shuts down to allow for users to close running applications.

BZ#996926

With this update, it is now possible to specify whether encryption is set for fence agent fields in the Power Management tab of the New Host and Edit Host windows. This enhancement addresses cases where certain fence agents require the ability to set whether a field is encrypted.

BZ#1132066

Previously, it was only possible to copy disks attached to a template to a different storage domain. With this release, you can now also copy virtual machine disks and floating disks to either the same or a different storage domain.

BZ#1145237

Previously, the Java SDK did not support authentication to a RHEV-M server that was configured with Kerberos. Now, the Java SDK supports authentication using a previously obtained Kerberos ticket. When doing this the SDK will take the credentials from the Kerberos credentials cache and will use them to authenticate with the server. The Kerberos environment must be configured correctly before calling the Java SDK and the credentials cache must be already populated. To configure the environment two files are required, the Kerberos configuration file and the JAAS configuration file. The JAAS configuration file needs to be created with content similar to:

```
com.sun.security.jgss.login {  
  
    com.sun.security.auth.module.Krb5LoginModule required client=true  
    useTicketCache=true doNotPrompt=true;  
  
};  
  
com.sun.security.jgss.initiate {  
  
    com.sun.security.auth.module.Krb5LoginModule required client=true  
    useTicketCache=true doNotPrompt=true;  
  
};
```

In addition to these files the following system properties have to be added to the JVM:

```
-Djava.security.auth.login.config=/etc/jaas.conf  
-Djava.security.krb5.conf=/etc/krb5.conf  
-Djavax.security.auth.useSubjectCredsOnly=false
```

BZ#1200952
-

With this release, the Linux Boot Options section of the Run Once window allows users to select kernel and initrd files for Linux virtual machines. Available files are files from the ISO domain of type Unknown (i.e. not ISO, floppy, or disk).

BZ#1003492

The process to create a template from a virtual machine snapshot has been simplified. Previously the user needed to create a virtual machine from a snapshot, and then create a template from the virtual machine. The new process enables the user to create the template directly from the snapshot.

BZ#965289

This feature adds the ability to define a management network at the cluster level. This allows you to create a virtual Data Center with multiple clusters that have different management networks, which in turn allows you to use the same physical network with different VLANs defined for each management network.

BZ#976044

This feature allows users to enable multiple console clients (for example, SPICE and VNC) for a virtual machine, so that users can switch clients without restarting the virtual machine. The virtual machine can now be configured with a "SPICE + VNC" console type, which enables this behavior. The "Console Options" dialog for a virtual machine enables protocols to be switched on a per-user basis.

BZ#950248

A functionality has been added to the Red Hat Enterprise Virtualization Manager to report the SPICE client version that a user connects to a console with. Because of this, it is now possible to block older SPICE clients from connecting to virtual machine graphical consoles. To configure this, use the engine-config tool to set the RemoteViewerSupportedVersions and RemoteViewerNewerVersionUrl fields within vdc_options.

BZ#1080029

It is now possible to track the number of days that a user has been attached to a pooled virtual machine by inspecting the 'Creation Date' in the 'Permission' sub-tab.

BZ#912263

Virtual machine and template names only need to be unique within a data center, the names can be re-used in different data centers in the environment.

BZ#1111095

Previously, the `DISK_STORAGE_MANIPULATION` permission allowed users to perform live storage migration as standard. Now, a new permission, `DISK_LIVE_STORAGE_MIGRATION`, has been introduced to allow finer control over which users can perform live storage migration.

Upgrading to a version that includes this fix (3.6.0 or 3.5.1) will grant the new permission to all roles that included the `DISK_STORAGE_MANIPULATION` permission (DataCenterAdmin, StorageAdmin, ClusterAdmin, and relevant custom roles) to maintain functionality.

BZ#1128763

The REST API can be used now to retrieve the complete `.vv` file with console connection information, allowing easier scripting of connecting to virtual machine graphical consoles.

BZ#1127777

A new plugin has been added to `sos 3.2`, the `sosreport` tool, so that information about the hosted-engine setup and high availability daemons is now collected by log collector.

BZ#1191074

Previously, user defined iptables rules were overwritten when the host was added to the Manager and the automatic configuration of the firewall was turned off. Now, when the automatic configuration of the firewall is turned off the iptables rules will not be rewritten.

BZ#798601

In the User Portal, the following visual indicators have been added to indicate that the virtual machine console is in use:

1. The virtual machine background of an occupied console is grayed-out when not selected.
2. The text "console in use" is displayed in the virtual machine status description of an occupied virtual machine.

BZ#1200067

Using the `remote-viewer` tool to connect to an `ovirt://` URI now displays a menu that allows the user to change the CD image inserted in the virtual machine. This makes it possible to change the inserted CD while the virtual machine is running, without the need to access the Administration Portal or the User Portal.

BZ#1120670

Events can now be dismissed and restored in the Administration Portal.

BZ#1188759

The Red Hat Enterprise Virtualization Manager now periodically monitors the CA certificate, the Manager certificate, and host certificates, and reports via the event log when a certificate is about to expire.

The Manager also produces an alert for hosts when their certificates have expired. A new button in the Hosts tab allows the user to enroll a certificate for the host. The same action is exposed in the REST API, by sending a POST request to `/api/hosts/{host:id}/enrollcertificate`.

BZ#679070

Two storage-space thresholds have been added for storage domains:

- * `WarningLowSpaceIndicator` - configured as a percentage (0-100) of disk space. A storage domain with disk space below this threshold will display warning to the user and in the log, and
- * `CriticalSpaceActionBlocker` - configured as an integer (in GB) between 0 and the `MaxInteger`, and can exceed the total space of the storage domain. A storage domain with disk space below this threshold will block all operations that consume storage space, even if the operation is temporary, and will display relevant warning to the user and in the log.

These values can be configured when creating, editing, or importing a storage domain.

BZ#1145234

Previously, the Python SDK did not support authentication to a RHEV-M server that was configured with Kerberos and only supported authentication with a username and a password. Now, the Python SDK supports authentication using a previously obtained Kerberos ticket that is valid for the realm of the RHEV-M server. To authenticate using a Kerberos ticket first acquire the Kerberos ticket by using the `kinit` command, or another mechanism, then use the `"kerberos=True"` option in the constructor of the API object.

BZ#1145239

Previously, the CLI did not support authentication to a RHEV-M server that was configured with Kerberos and only supported authentication using a username and password. Now, the CLI supports authentication using a previously obtained Kerberos ticket by specifying the `--kerberos` command line option.

BZ#1128691

With this release, the Administration Portal's search function can filter disks by the `"Wipe After Delete"` property.

BZ#758516

With this release, the request for 'LockScreen' can be configured to be ignored by changing the 'ignore_lock_screen_request value' to True in the guest agent configuration.

BZ#1140569

It is now possible to update the template for an existing virtual machine pool. This enables updated templates to be deployed to all virtual machines in the pool, and the next restarted virtual machine will be based on the new template version.

BZ#1204793

With this update, the default name for the Red Hat Enterprise Virtualization management network has changed from 'rhev' to 'ovirtmgmt'.

BZ#1169228

When importing a disk from a Glance storage domain via the REST API, the response will now contain the UUID of the disk created on the target storage domain.

BZ#1163105

Search query filtering has been added to the REST API to match functionality of the Web Admin Portal.

BZ#1203837

With this update XFS based storage for local storage domains is now supported on the Red Hat Enterprise Virtualization Hypervisor. Red Hat Enterprise Virtualization 3.6 is not required to use XFS based storage domains.

BZ#893927

With this update, you can configure quotas using the REST API. New entities such as QuotaStorageLimit and QuotaClusterLimit were added to the quotas sub-collection. QuotaStorageLimit allows you to specify a quota policy for individual or all storage domains. QuotaClusterLimit allows you to specify the Memory and CPU limit for individual or all clusters in a data center.

BZ#1211933

The RHEV-M Virtual Appliance is now available as an rpm to simplify deployment of the self-hosted engine. When the rpm is installed, the hosted-engine deployment script will discover it and suggest to automatically configure the appliance.

BZ#1184445

Previously, users could remap the Ctrl+Alt+Del shortcut to Ctrl+Alt+End using the Console Options dialog in the Administration or the User Portal. With this enhancement, users can now use the engine-config utility with the 'RemapCtrlAltDelDefault' option to remap the shortcut keys. This global value can still be optionally overridden for each virtual machine using the Console Options dialog.

BZ#1157999

Previously, all OpenStack external providers like Neutron and Glance used the same Keystone authentication URL stored in the KeystoneAuthUrl configuration value. Now, a URL field has been added to provider configuration so that different OpenStack providers can use different Keystone authentication URLs.

BZ#1200103

The virt-viewer tool can now report the SPICE client version being used to connect to a console. This allows a minimum SPICE client version to be set using the engine-config tool, and older SPICE clients to be blocked from connecting to virtual machine graphical consoles.

BZ#1163107

With this enhancement, the RHEV-M appliance now uses cloud-init for initial virtual machine configuration instead of the first-boot dialog.

BZ#1198138

With this release, users can attach a cloud-init ISO image to automatically configure the RHEVM Appliance from hosted-engine setup.

BZ#1211231

With this enhancement, users can connect to Windows 8 and Windows 2012 virtual machines using the SPICE protocol without QXL drivers. Limitations include: no multiple monitors, graphics are not accelerated, etc.

BZ#957593

In multiple-monitor setups, it is now possible to specify which monitors are to be used by a virtual guest, and which are to be reserved for the local machine. This is done by editing the ~/.config/virt-viewer/settings file.

BZ#1064474

It is now possible to populate the description of a new LUN disk with

It is now possible to populate the description of a new LUN with all, none, or part of the LUN id. The default setting uses the last four digits of the LUN id and can be configured via engine-config-manager. This value can be set to '-1' for the full LUN id to be used, or '0' for this feature to be ignored. A positive integer will populate the description with the corresponding number of characters of the LUN id.

BZ#1224418

Red Hat Enterprise Virtualization Manager now supports Novell eDirectory with the RFC-2307 schema extension.

BZ#1117031

Some operating systems are not supported on older CPU architectures. For example, Windows 8 does not run on Conroe-based hosts. When a cluster is set to a certain CPU model, the unsupported operating systems will no longer be available in the 'New Virtual Machine' and 'Edit Virtual Machine' windows for that cluster.

BZ#601863

This feature implements a command line access to a virtual machine's serial console using the SSH client. For more information, see https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Virtualization/3.6/html/Virtual_Machine_Management_Guide/sect-Starting_the_Virtual_Machine.html#Opening_a_Serial_Console_to_a_Virtual_Machine.

BZ#515840

It is now possible to add memory to a virtual machine without having to shut it down first.

BZ#867453

QEMU capabilities for auto-convergence and/or Xor Binary Zero Run-Length-Encoding (XBZRLE) can be used to reduce virtual machine downtime and improve convergence during migration. This is supported by hierarchical configuration in 3 levels: global (engine-config), cluster, and virtual machine.

BZ#912260

This feature changes the way allocated MAC addresses are tracked. Previously, there was one global MAC address pool, from which all requests for MAC addresses were served. Now you can create several MAC address pools with different settings, and assign one of such pools to a certain data center. This allows each data center to have a different 'mac-space'. Pools can also be shared among multiple data centers.

BZ#965929

When Red Hat Enterprise Virtualization configures a network on a host, it generates several ifcfg files with specific content. If a user wants to tweak the content by adding or removing any initscripts, they must deploy a hook script to do so whenever the ifcfg file is rewritten.

The example hook script will add the following entries to the ifcfg file of nic 'ens11' when ifcfg is modified:

```
USERCTL=yes
ETHTOOL_OPTS="autoneg on speed 1000 duplex full"
```

To add the hook script to VDSM hooks, place the file in /usr/libexec/vdsm/hooks/before_ifcfg_write, and ensure the VDSM has permissions to the file.

The VDSM checks this directory every time ifcfg configuration is changed, and executes each script in this directory. As input to the script, the VDSM will pass the path to a json file containing the ifcfg file data, for example:

```
{
  "config":
  "DEVICE=ens13\nHWADDR=52:54:00:d1:3d:c8\nBRIDGE=z\nONBOOT=yes\nMTU=1500\nNM_CONTROLLED=no\nIPV6INIT=no\n",
  "ifcfg_file": "/etc/sysconfig/network-scripts/ifcfg-ens7"
}
```

Modified ifcfg file contents (under the "config" entry) can be written to a json file, and will be used by VDSM as the new ifcfg file content. If no file is given, VDSM will use the unmodified content.

The following is a description of the example hook script.

Reading in the data from the json file:

```
hook_data = hooking.read_json()
```

Getting the value of the new ifcfg file content:

```
config_data = hook_data['config']
```

Getting the name of the ifcfg file which will be modified:

```
ifcfg_file = hook_data['ifcfg_file']
```

Modify and write the content of the ifcfg file:

```
config_data += "USERCTL=yes\nETHTOOL_OPTS=\"autoneg on speed 1000
duplex full\"\n"
hook_data['config'] = config_data
hooking.write_json(hook_data)
```

The file also dumps the data read from the json file to file (/tmp/hook_data), to show the format of the input json file:

```
with open("/tmp/hook_data",mode='w') as file:  
    file.write( json.dumps(hook_data))
```

BZ#1199513

This update adds new fields representing information about hosts to the Red Hat Enterprise Virtualization Reports capability, allowing users to use these fields in ad-hoc reports.

BZ#1227714

With this update, MOM has now been separated from VDSM, and runs as a standalone process that communicates with VDSM using XML-RPC over a UNIX socket. This makes it possible to reduce the number of threads that VDSM creates, and results in almost no busy threads in MOM, resolving an issue with the Python global interpreter lock and improving performance on high-end machines such as those with 100 or more CPUs.

BZ#1202371

UsbDk has been added to Red Hat Enterprise Virtualization as a preferred alternative to usbclerk. UsbDk is a filter driver that is able to allow and disallow access to USB devices from spice-client on Windows machines. This allows virtual machines access to the client USB devices through SPICE client (remote-viewer) running on Windows machines.

BZ#1024010

A virtual machine's buffered or cached memory is now taken into account in the Extract, Transform and Load (ETL) process. Some applications, like the Oracle Directory Server, uses cached memory as permanent memory and never releases it. As a result, users need to take this memory into account when planning for memory requirements. The data is collected each minute, hour and day as a default and users can create ad hoc reports based on the collected data.

BZ#1148080

With this update the perf tool has been added to the Red Hat Enterprise Virtualization Hypervisor to allow for better performance monitoring.

BZ#1231274

The status of a storage domain can now be reported by an external system. The status is set using the REST API, and the internal status (as reported by the Manager) and the external status (as reported by a third party) for each storage domain are displayed when a domain is selected in the Administration Portal user interface.

BZ#1112217

The Capacity Planning report has been added to Red Hat Enterprise Virtualization 3.6 to track cluster capacity. This report tracks overall cluster allocations and shows details including number of hosts, number of virtual machines (running and configured), number of CPUs (configured, running and physical), memory size (configured, running and physical) including shared memory and ballooning, and storage size (amount allocated and used; configured, running) for defined disks and actual size per disk.

BZ#1201508

With this update virtual machines in the cluster level of Red Hat Enterprise Virtualization 3.6 run with the pc-i440fx-rhel7.2.0 machine type on x86 architecture and pseries-rhel7.2.0 on ppc64 architecture by default. This means that virtual machines can use all of the capabilities provided by these new machine types.

BZ#1232586

Windows 10 is now supported as a guest operating system (32 and 64 bit).

BZ#1117489

Previously, creating a new virtual machine would open the 'Guide Me' window, which offered a link to 'Configure Virtual Disks'. Now, this functionality is integrated in the 'New Virtual Machine' and 'Edit Virtual Machine' windows, and the 'Guide Me' window no longer opens in a virtual machine context.

BZ#1201511

With this update the search capability of Red Hat Enterprise Virtualization has been improved so that virtual machines can be searched for based upon their virtual machine cluster compatibility level, custom virtual machine emulated-machine type, and CPU model.

BZ#1025796

It is now possible to view all active sessions through the Administration Portal. 'Guest Information' can be found under 'System' in tree mode.

BZ#1106562

With this update the Red Hat Enterprise Virtualization Manager provides a disk snapshot (volume) ID. This allows users to view the mapping of each Red Hat Enterprise Virtualization virtual machine's virtual disk to one or more data storage LUNs. This can be useful for troubleshooting storage performance issues. The disk snapshot (volume) IDs can be viewed in two places: Virtual Machines -> Snapshots -> Disks or Storage -> Disk Snapshots.

BZ#1228257

It is now possible to receive notifications when a virtual machine enters a paused state. The corresponding entry was added under VM Events in the Users -> Event Notifier -> Manage Events window.

BZ#1228991

With this update the total RX/TX byte statistics for the hypervisor and virtual machine network interfaces have been added to statistics ad hoc domains. This allows users the ability to calculate, for a specific time period, the RX/TX bytes used, per virtual machine or hypervisor interface.

BZ#869296

This feature provides additional guest system information such as operating system, version, architecture, and the currently configured time zone.

Additionally, it shows a warning in form of an exclamation mark with a tool tip in the Administration Portal's virtual machine overview list when the operating system does not match the configured type, or if a Windows virtual machine timezone configured as a hardware timezone offset does not match the reported value.

This feature requires the Red Hat Enterprise Virtualization Manager Guest Agent to be installed on the guest operating system.

BZ#866124

A health status field has been added to host and storage domain entities, which can be set and retrieved in the UI and the REST API.

BZ#917026

It is now possible to directly boot a virtual machine from an ISO image directly over HTTPS without the need to have previously imported it on the ISO storage domain. This operation is performed via a VDSM hook. Please note that a stable HTTPS connection is required to avoid EIO errors.

BZ#998607

With this update, it is now possible to change the allocation policy of disks imported from an export domain as part of importing a virtual machine. This allows users to specify the format and allocation policy of each disk. Note that ``collapse_snapshots`` needs to be set to true and the disk IDs should be the IDs of the existing disks that the user is importing.

For example, to force one of the disks to be preallocated:

```

POST /storagedomains/{storagedomain:id}/vms/{vm:id}/import
<action>
  <storage_domain>
    <name>mydata</name>
  </storage_domain>
  <cluster>
    <name>mycluster</name>
  </cluster>
  <vm>
    <disks>
      <disk id="792f8ca8-3932-429b-9660-006ba144bc72">
        <format>raw</format>
        <sparse>>false</sparse>
      </disk>
    </disks>
    <snapshots>
      <collapse_snapshots>true</collapse_snapshots>
    </snapshots>
  </vm>
</action>

```

BZ#1172629

Hosts now support more than two power management cards through the use of sequential and concurrent card configurations.

BZ#1122990

Previously, when a comment was added to an object, the Administration Portal displayed a yellow paper sheet icon in the "Comment" column. This has now been changed to render the actual comment.

BZ#1169224

It is now possible to specify a custom name for the disk and/or template when importing a Glance disk through the REST API.

BZ#1116550

The 'Start in Pause Mode' functionality of the Administration Portal has been added to the REST API. Users can now use the '`<start_paused>true|false</start_paused>`' value when configuring virtual machines.

BZ#975835

Using the remote-viewer tool to connect to an `ovirt://` URI now displays a menu that allows the user to change the CD image inserted in the virtual machine (VM). This makes it possible to change the inserted CD while the VM is running without the need to use Red Hat Enterprise Virtualization or the oVirt portal.

BZ#1232559

With this update, Microsoft Windows 10 is now supported as a guest operating system in Red Hat Enterprise Virtualization. The required VirtIO-Win drivers for this operating system are also provided.

BZ#1117484

In administration portal it is now possible to open the create virtual machine dialog from the template list populated with the selected template.

BZ#1213795

This update provides a new python-unittest2 package, which is a required dependency for the python-mock package.

BZ#1128881

Previously, VDSM reported all channel devices as 'Unknown' device types with a warning. This was not correct and has now been fixed.

BZ#1196757

With this release, you can edit the alias of a disk image in the Import Image view when importing an image from Glance. Without the ability to change the alias, each import of the same image creates a disk with the same name (which is the default name for that disk). Now, an editable column named "Disk Alias" was added to the table of images which were chosen to be imported. Each image has its own default name, which has not changed and can be left as is. However, one can now edit each image alias before the import.

BZ#1206102

With this release, cloud-init packages are tracked in the reported list of installed packages on Linux distributions.

BZ#1173551

Previously, when users executed a solution step suggested by the Optimizer, if the solution wasn't doable, an error message was returned. This was confusing for users. With this update, if the full solution is not doable, the solution is still displayed but grayed out so it is clear to users that the full solution is not possible to implement at the time. Users can still read the suggested solution and manually implement parts of the solution that are doable.

BZ#1139492

This release allows editing of some self-hosted engine Manager VM fields (memory, CPU, and networking). The previous self-hosted engine version did not have a config file that the user was allowed to change to update

the Manager VM settings. Now, direct editing of memory, CPU, and attached NICs directly from the Administration portal is supported. The configuration is flushed to all self-hosted engine nodes according to the `OvfUpdateIntervalInMinutes` config option (default: each 60 minutes). The config value can be changed to one minute (engine-config -s `OvfUpdateIntervalInMinutes=1`) if the user wishes to make this change instantaneous.

Note: There is a known issue with hotplug. The Administration portal will report hotplug errors (CPU, memory, and possibly disk) after editing. Those errors have no impact on the configuration transfer and the values will be properly applied once the Manager VM is restarted by self-hosted engine tooling (or manually).

BZ#1327041

To provide a way to configure gssapi using ticket cache for authz pool, a new security domain called 'oVirtKerbAAA' was added to JBoss configuration, which can be customized by using the following variables:

`AAA_KRB5_CONF_FILE=path_to_krb5_conf`

Specify the custom krb5.conf file. The default is `/etc/ovirt-engine/krb5.conf`

Java supports only one krb5 configuration, if the user changes this property, then manage-domains will stop working because its configuration is managed in `/etc/ovirt-engine/krb5.conf`.

`AAA_JAAS_USE_TICKET_CACHE=true/false`

Enable or disable using the ticket cache file for authentication.

`AAA_JAAS_TICKET_CACHE_FILE=path_to_ticket_cache`

Specify the custom ticket cache file. The default is `/tmp/krb5cc_${UID}`, where UID is the ID of the ovirt user.

`AAA_JAAS_USE_KEYTAB=false/true`

Enable or disable using the keytab file for authentication.

`AAA_JAAS_KEYTAB_FILE=path_to_keytab_file`

Specify the custom keytab file. The default is `${OVIRT_HOME}/krb5.keytab` where `OVIRT_HOME` is home directory of ovirt user.

To use one of the features, the user has to create a new configuration file and specify the correct values for those variables, for example: `/etc/ovirt-engine/engine.conf.d/99-jaas.conf`.

To use the new security domain configuration from `aaa-ldap`, the user has to specify the correct `JAASClientName` (default is `oVirtKerb`). Therefore, to use this new configuration for authz pool, the user has to add following line to `aaa-ldap` authz configuration:

```
pool.authz.auth.gssapi.jAASClientName = oVirtKerbAAA
```

To use it for both `authn` and `authz`, the user has to add the following line to `aaa-ldap` configuration:

```
pool.default.auth.gssapi.jAASClientName = oVirtKerbAAA
```

BZ#1324919

The Memory Overcommitment Manager (MOM) now knows how to read the IO Quality of Service settings from metadata and set the respective ioTune limits to a running virtual machine's disk. This feature allows proper support for disk hot plug and changes to disk QoS for an already-running virtual machine.

BZ#1348933

With this enhancement, support for SNMP v3 traps was added. RHEV-M is now able to provide SNMP v2c and v3 traps. New SNMP related options which can be set along with the default values can be found at: `/usr/share/ovirt-engine/services/ovirt-engine-notifier/ovirt-engine-notifier.conf`.

BZ#1332680

This release provides better support for the Japanese keyboard layout.

BZ#1321796

It is now possible to edit the self-hosted engine Manager virtual machine.

Before version 3.6.5, a configuration value prevented the self-hosted engine Manager virtual machine from being edited because the functionality was not available. A plugin automatically changed the default configuration value from true to false, which prevented editing. The functionality to edit the self-hosted engine Manager virtual machine is now available, and therefore the plugin has been removed.

BZ#1324136

This package contains the Red Hat Enterprise Virtualization product documentation in both HTML and PDF formats. Once installed, the documentation is available from the Red Hat Enterprise Virtualization Manager landing page.

Users of the Red Hat Enterprise Virtualization Manager are advised to upgrade to this updated package, which provides updated documentation.

BZ#1356194

Previously, cluster compatibility version upgrades were blocked if there was a running virtual machine in the cluster. Now, the user is informed about running/suspended virtual machines in a cluster when changing the cluster version. All such virtual machines are marked with a Next Run Configuration symbol to denote the requirement for rebooting them as soon as possible after the cluster version upgrade.

BZ#1316583
-

Fencing of HP iLO 3 and HP iLO 4 hosts via SSH is now supported.

3.2. RELEASE NOTES

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

BZ#[1229177](#)

This change disables the ability to use VDSM in clusters from 3.0 to 3.3. Red Hat Enterprise Virtualization 3.6 drops support for cluster levels between 3.0 and 3.3 and Manager versions 3.3 and below. Support for Red Hat Enterprise Virtualization Manager 3.4 is still available as tech-preview.

BZ#[922744](#)

With this change, the `glusterfs-cli` package must be installed. Please note that in the VDSM spec file, there is no dependency to `glusterfs-cli`. This means that VDSM installation will succeed even if `glusterfs-cli` is not installed, and that the `glusterfs-cli` package must be installed manually.

BZ#[1113159](#)

The HTTP components packages required by the Red Hat Enterprise Virtualization Manager Java SDK package have been changed to match release 6.3 of JBoss Enterprise Application Platform. The location of the JAR files provided by the new required packages is different to the previous location, so users with scripts that depend on these locations must update those scripts accordingly. For example, if you have a script such as the following:

```
java -classpath \
myapp.jar:\
/usr/share/java/rhevm-sdk-java/rhevm-sdk-java.jar:\
/usr/share/java/httpcore.jar:\
/usr/share/java/httpclient.jar \
my.app.Main
```

The script must be updated to the following:

```
java -classpath \
myapp.jar:\
/usr/share/java/rhevm-sdk-java/rhevm-sdk-java.jar:\
```

```
/usr/share/java/httpcomponents-eap6/httpcore.jar:\n\n/usr/share/java/httpcomponents-eap6/httpclient.jar \n\nmy.app.Main
```

Note that the location of the `httpcore.jar` and `httpclient.jar` files has changed from `/usr/share/java` to `/usr/share/java/httpcomponents-eap6`.

BZ#970711

With this release, the downtime during a virtual machine migration is reported. This is the duration of the handover time needed to transfer the execution from the source host to the destination host (the last phase of migration).

Note: as part of this enhancement a more strict clock synchronization is enforced between the Manager and hosts. Previously, there was an alert when the host was 5 minutes off the Manager time; now it is 100 ms. The reason is that for accurate downtime reporting the source and destination hosts must have the same clock time. This may cause a lot of new alerts in environments which are not configured properly. The configuration option (used in `engine-config`) has changed from `'HostTimeDriftInSec'` to `'HostTimeDriftInMS'`.

BZ#1117302

Previously, the field `"vm_disk_actual_size_mb"`, in `"dwh_vm_disks_history_view"`, was the virtual machine disk size for the current snapshot of the virtual machine. It was decided that this information is irrelevant for collecting to the `ovirt-engine-history` database and what should be collected is the total disk size that the virtual machine is using, including all snapshots. From Red Hat Enterprise Virtualization 3.6 this field will show the Total virtual machine disk size. Previous collected data will be kept even though it is inaccurate.

BZ#1083523

Previously, Red Hat Enterprise Virtualization provided three ways to access a virtual machine graphical console from web portals: using an ActiveX/Firefox SPICE plugin, `.vv` file MIME type association to remote-viewer (called Native in the user interface), and web-based clients (technology preview). In this version of Red Hat Enterprise Virtualization, the browser-specific plugins have been deprecated in favor of more universal generic `.vv` file association, which allows for more flexibility (for example, using custom VNC viewers to view the console) and does not suffer from frequent browser changes and instabilities.

As a result, the default SPICE console mode has changed in new installations, which now default to the Native setting in the user

interface. For existing installations that are upgraded this value is not changed, but can be configured by the global `ClientModeSpiceDefault` parameter with the `engine-config` tool.

BZ#1109154

QEMU capabilities for auto-convergence and/or Xor Binary Zero Run-Length-Encoding (XBZRLE) can be used to reduce virtual machine downtime and improve convergence during migration. This is supported by hierarchical configuration in 3 levels: global (`engine-config`), cluster, and virtual machine.

BZ#1308634

To prevent connection failure with local USB devices on a Windows 7 client machine, update the Windows machine with Microsoft Security Update KB3033929 before installing the USB Development Kit Driver (`spice-usbdk-win`). Failure to apply this update before installing the `spice-usbdk-win` driver otherwise results in USB connection loss and an error reporting an unsigned driver.

See <https://technet.microsoft.com/en-us/library/security/3033929> for more information on this security update.

BZ#1300668

With this update Red Hat Access plugin for Red Hat Enterprise Virtualization has been deprecated and has been converted into a page pointing to the product documentation. The features that were previously delivered by the plugin, such as Knowledgebase access and support case engagement, will continue to be available through the Red Hat Customer Portal. The log viewer has been removed entirely. Required data and logs can be collected by using the Log collector tool. For more information see <https://access.redhat.com/solutions/2137681>

3.3. KNOWN ISSUES

These known issues exist in Red Hat Enterprise Virtualization at this time:

BZ#1149694

The `BOOTIF=link` argument is currently not supported for Red Hat Enterprise Linux 7.0 Hypervisors.

BZ#1176059

This release does not support registering Red Hat Enterprise Virtualization Hypervisors to RHN with a proxy.

BZ#1269452

If the SPICE ActiveX plug-in fails, make sure you have installed the Microsoft update at <https://technet.microsoft.com/library/security/MS15-065>. See <https://support.microsoft.com/en-us/kb/3072449> for more information.

BZ#825045

Red Hat Enterprise Linux 7 virtualization hosts now support Virtual Function I/O (VFIO), a new UIO-like kernel driver that allows for a cleaner PCI device assignment architecture in KVM.

Note that IOMMU support needs to be enabled manually on the host's kernel command line. For GPU passthrough, additional kernel configuration is needed: for example, in the case of nvidia, the default driver needs to be avoided in both the host and the guest (via blacklisting of the OSS driver, and by binding the PCI device to the pci-stub driver on the host).

BZ#1182048

On some Red Hat Enterprise Virtualization Hypervisor hosts, a device-mapper error (device-mapper: table: 253:6: multipath: error getting device) is displayed on the login screen. This error does not have a functional impact on those hosts.

BZ#1261812

Due to the QEMU known issue (see BZ#1262143), ppc64le virtual machines takes longer to start. To work around this issue, the default virtual machine maximum memory setting for ppc64le systems is set to 1TB instead of 4TB on x86_64 systems. This default can be increased, however then it takes a few minutes for a ppc64le virtual machine to start.

BZ#1263563

The startup time for virtual machines with large memory is slow on IBM POWER8 hosts. Therefore the default maximum memory was decreased to 1TB so the delay in the start up time was not noticeable. To change the default value, use the engine configuration tool with the VM64BitMaxMemorySizeInMB key.

BZ#1095028

Aborting the media integrity check during Red Hat Enterprise Virtualization Hypervisor 7.0 boot causes system halt and failure to boot. Remove the kernel argument rd.live.check from the kernel command line to prevent the media check on boot.

BZ#1146115

If the same iSCSI target is used to create two or more storage domains, even if the storage domain is put into maintenance mode, the iscsi

session does not get logged out. Red Hat recommends to use different iSCSI targets to create different storage domains. To work around this issue, restart the hypervisor host.

BZ#1280264

V2V conversion is not supported on ppc64le-based hosts.

BZ#1305498

Large virtual machines have a significant overhead on Red Hat Enterprise Linux hosts on IBM POWER8 hardware, which is not accounted for when scheduling the virtual machine. 1/128th of the virtual machine memory size is required to be available on the host as a consecutive non-swapped block of memory. The end-user effect is that sometimes virtual machines do not run, even though the memory on the host seems to be sufficient.

BZ#1250556

Previously, changing the host name of the Manager machine when the machine also provided a local ISO storage domain was prevented by the rename tool, to prevent the ISO storage domain losing connectivity during the renaming process. Also, changing the host name of the Manager machine when the machine also provided a local data domain could cause running virtual machines to become stuck due to the hosts losing connectivity with their virtual disks. Now, the rename tool checks both of these, and guides the user to eject/shut down/put to maintenance any required virtual machines or storage domains, and only then allows the rename process to continue. To change the host name of the Manager machine, see the product documentation:
https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Virtualization/3.6/html-single/Administration_Guide/index.html#sect-The_oVirt_Engine_Rename_Tool

BZ#1293389

Red Hat Enterprise Linux 7.2 virtual machines running on PPC64 hosts will crash during hot plug/unplug if the kernel version on the virtual machine is older than kernel-3.10.0-327.2.1.el7, or if the host kernel is older than this version.

BZ#1343938

The Disk Alignment feature is unavailable for PPC.

3.4. DEPRECATED FUNCTIONALITY

BZ#1039267

Since Red Hat Enterprise Virtualization 3.3, the deployment process

disables vdsmd-reg. As a result, information on the Red Hat Enterprise Virtualization Manager host is no longer available when registering Red Hat Enterprise Virtualization Hypervisors from the Red Hat Enterprise Virtualization Manager.

BZ#1215387

With the release of Red Hat Enterprise Virtualization 3.6, VDSM will no longer support engines older than Red Hat Enterprise Virtualization 3.3.0. It will, however, continue to support clusters and data centers with compatibility versions lower than 3.3.

3.5. TECHNOLOGY PREVIEWS

Technology Preview features are not fully supported under Red Hat Subscription Service Level Agreements (SLAs), may not be functionally complete, and are not intended for production use. However, these features provide early access to upcoming product innovations, enabling customers to test functionality and provide feedback during the development process.

In this release of Red Hat Enterprise Virtualization, the following new features were added as Technology Preview features:

- OpenStack Volume (Cinder) as an external storage provider for virtual machine disks

In this release of Red Hat Enterprise Virtualization, the following features remain in Technology Preview status:

- The Optimizer, a load balancing service that analyzes the memory usage of hosts in a particular cluster, and provides a suggested set of virtual machine migrations that will enable optimal virtual machine deployment across hosts
- OpenStack Networking (Neutron) as an external network provider
- SPICE HTML5 browser client, for connecting to virtual machine consoles

APPENDIX A. REVISION HISTORY

Revision 3.6-16	Thu 28 Jul 2016	Red Hat Enterprise Virtualization Documentation Team
Updated list of enhancements and release notes for the Red Hat Enterprise Virtualization 3.6.8 release.		
Revision 3.6-15	Wed 27 Jul 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1357423 - Removed Watchdog from the list of unsupported features for RHEV for IBM Power for the 3.6.8 release.		
Revision 3.6-14	Wed 25 May 2016	Red Hat Enterprise Virtualization Documentation Team
Added one bug to list of Known Issues. BZ#1323990 - Updated maximum guest memory.		
Revision 3.6-13	Wed 09 Mar 2016	Red Hat Enterprise Virtualization Documentation Team
Updated lists of enhancements, known issues, and technology previews for Red Hat Enterprise Virtualization 3.6.		
Revision 3.6-12	Tue 01 Mar 2016	Red Hat Enterprise Virtualization Documentation Team
Updated list of enhancements and release notes for Red Hat Enterprise Virtualization 3.6.		
Revision 3.6-11	Fri 26 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1306589 - Removed a reference to Red Hat Enterprise Linux 7 hosts on IBM POWER8 big endian hardware.		
Revision 3.6-10	Mon 22 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
Initial revision for Red Hat Enterprise Virtualization 3.6 general availability.		
Revision 3.6-9	Fri 19 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1308944 - Removed memory ballooning from the list of unsupported features for Red Hat Enterprise Virtualization for IBM Power.		
Revision 3.6-8	Wed 03 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
Updated the description of the rhel-6-server-rhev-3.6-power-rpms channel.		
Revision 3.6-7	Mon 01 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
Removed a note about virtual machine disk snapshot functionality being in Technology Preview.		
Revision 3.6-6	Wed 20 Jan 2016	Red Hat Enterprise Virtualization Documentation Team
Updated repository information for Red Hat Enterprise Virtualization for IBM Power. BZ#1298152 - Updated the text for BZ#1190853.		
Revision 3.6-5	Mon 18 Jan 2016	Red Hat Enterprise Virtualization Documentation Team
Updated for Red Hat Enterprise Virtualization for IBM Power release.		
Revision 3.6-4	Wed 23 Dec 2015	Red Hat Enterprise Virtualization Documentation Team
Updated to add one bug to Known Issues.		

Revision 3.6-3**Wed 18 Nov 2015****Red Hat Enterprise Virtualization
Documentation Team**

Updated revision for Red Hat Enterprise Virtualization 3.6 beta.

Revision 3.6-2**Wed 18 Nov 2015****Red Hat Enterprise Virtualization
Documentation Team**

Final revision for Red Hat Enterprise Virtualization 3.6 beta.

Revision 3.6-1**Tue 11 Aug 2015****Red Hat Enterprise Virtualization
Documentation Team**

Initial creation for the Red Hat Enterprise Virtualization 3.6 release.