HP Helion OpenStack® Carrier Grade 1.1: Release Notes

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HP Helion OpenStack Carrier Grade is a high-performance, high-availability, cloud operating system that enables telecommunications operators to use Commercial-off-the-shelf (COTS) hardware to manage Virtualized Network Functions (VNF) within a carrier grade Network Function Virtualization (NFV) architecture.

HP Helion OpenStack Carrier Grade brings together the flexibility and scalability of the IT cloud, and the high-availability and performance demanded by the Telecommunications industry, into a unique carrier grade, industry-leading solution to deliver a price-performance ratio well above alternative solutions. HP Helion OpenStack Carrier Grade is aligned with the ETSI-NFV architecture

For more information on using HP Helion OpenStack Carrier Grade, see the *HP Helion OpenStack Carrier Grade Software Installation Guide* and the *HP Helion OpenStack Carrier Grade Administration Guide*. For information on using the HP Helion OpenStack Carrier Grade Developer API, including API definitions and usage descriptions, see the *HP Helion OpenStack Carrier Grade SDK*.

See also:

- *Changes in This Release* on page 5
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- *Known Problems and Limitations* on page 8
- *#unique_5*

Supported Hardware Platforms

The following is the list of certified platforms for running HP Helion OpenStack Carrier Grade in the KVM region:

Table 1: HP Helion OpenStack Carrier Grade Certified Hardware Platforms

Manufacturer	Platform
Hewlett-Packard	HP360 Proliant DL360P Gen8 Server
	HP360 Proliant DL360P Gen9 Server
	HP380 Proliant DL380P Gen8 Server
	HP380 Proliant DL380P Gen9 Server

The following NICs have been verified for PXE booting:

- Broadcom 1G
- Broadcom 10G
- Emulex 10G
- Intel 82599
- Intel i350

Supported Hardware Configuration

HP Helion OpenStack Carrier Grade has been verified to work using the following hardware configuration:

- The required number of controller nodes is two.
- The required number of storage nodes is two. Storage nodes are optional, depending on storage needs.
- The verified number of compute nodes is 20.
- For predictable performance, it is recommended to disable hyper-threading in the BIOS of all nodes in the cluster.

Supported System Configuration

HP Helion OpenStack Carrier Grade has been verified to work using the following system configuration:

- two controllers
- two storage nodes
- 20 compute nodes with dual Intel(R) Xeon(R) CPU E5-2670 v2 and E5-2640v3
- 200 virtual machine instances
- up to four physical ports per compute node
- maximum eight AVP vNICs per guest
- maximum eight SR-IOV vNICs per guest
- maximum 32 VFs per NIC

Supported Guest OSs

The following Guest OSs are supported by HP Helion OpenStack Carrier Grade:

- KVM 6.0
- KVM 5.0
- CentOS 6.4
- Fedora 19
- RHEL 6.5
- OpenSUSE 12.3

Requirements for specific guest OSs are included in the SDK README files.

Performance Considerations

The nature of the guest applications, their processing and storage demands, and other configuration factors can affect the overall performance of the HP Helion OpenStack Carrier Grade cluster.

Changes in This Release

This release of HP Helion OpenStack Carrier Grade includes a number of performance enhancements and additions to functionality in the KVM region.

Enhancements

- Virtual machine instantiation is enhanced to support:

  - CPU pinning
  - CPU up/down scaling
  - NUMA node awareness
  - Multi-NUMA support
  - Dedicated and configurable 2M and 1G huge pages
  - VM local storage support
- To use shared VCPUs, a shared physical CPU must be designated. For more information, see the *HP Helion OpenStack Carrier Grade Administration Guide: Designating Shared Physical CPUs on Compute Host*.
- Extra-specification commands are revised for improved OpenStack compatibility:

  - Custom `nova flavor-create` options are replaced by **nova flavor-key** options as follows:

nova flavor-create (removed)	nova flavor-key (added)
--vcpu-model	hw:cpu_model
--dedicated-cpus <true | false>	hw:cpu-model <dedicated | shared>
--guest-heartbeat	sw:wrs:guest-heartbeat
--processor-node <host-numa-node #>	hw:numa_node.<guest-numa-node-#> = <host-numa-node-#>

  - HP Helion OpenStack Carrier Grade-specific options are identified using the string **wrs**:

    - hw:wrs:min_vcpus
    - hw:wrs:shared_vcpu
    - hw:wrs:vcpu:scheduler
    - sw:wrs:guest-heartbeat
- Networking capabilities are enhanced to support:

  - Consolidated interfaces for OAM, management, infrastructure, and data networks
  - Accelerated virtual routing
  - Distributed virtual routing
  - VXLAN networking
  - PCI Pass-through and SR-IOV support
  - Mellanox CX-3 NICs

  > 📝 **Note:**
  >
  > The syntax and GUI controls for adding and modifying interfaces are revised substantially to accommodate logical interfaces and interface consolidation.
- Management facilities are enhanced for:

  - Historical alarms
  - GUI-based patching

- REST API patching access
- Customer logs
- Support for externally managed board management network
- REST API extensions are added for Nova, Neutron, Cinder, and Ceilometer.
- HTTPS support is added for REST API access

Usage Caveats

There are some usage issues you should be aware of when working working in the KVM region of this release.

VMs reported as ACTIVE before compute nodes are recovered

During a system recovery (for example, after a site power outage), when the controller is available but before the compute nodes are available, the Nova service shows an **Active** status for VMs . Until the compute nodes are available, this should be an **Error** status.

Controller swact raises spurious ssh security warning

On ssh login to the active controller after a controller swact, a security warning appears, saying the host identification has changed. This occurs because the ssh keys are not currently synchronized across controllers. It can be disregarded.

Mismatch of interface settings in LAG group

If the interfaces in a LAG group have mismatched speed or duplex settings, they are marked as incompatible by the system. To prevent this, ensure both interfaces in a LAG group use the same speed and duplex settings.

Storage or compute node must be re-added after MAC address change on management interface

For a compute or storage node, any change to the management interface configuration that results in a change of MAC address requires the node to be re-installed. The management interface MAC address can change if the physical Ethernet port is changed (for example, from eth1 to eth2), or if a LAG configuration is changed in a way that removes the Ethernet port associated with the LAG MAC address (for example, if the interface originally used for PXE boot is removed or replaced).

Instance cannot be launched with a specified port ID

Use of the --port-id parameter when launching an instance results in command failure.

Live migration resets uptime

When a VM is live-migrated, the uptime reported for the VM is reset to 0.

Interface network type cannot be changed directly from SRIOV to data

For an interface using network type "SRIOV," the network type must be changed to "none" before it can be changed to "data."

Glance image deletion does not release storage space

The storage space used by a glance image is not released when the image is deleted. To free the space for other uses, a glance-api restart is required.

Known Problems and Limitations

You may encounter some known limitations when working in the KVM region of this release.

Cinder Block Storage snapshot feature not working

For HP Helion OpenStack Carrier Grade cloud using 3PAR iSCSI configured as the Cinder block storage service. The Cinder volume snapshot feature might not function properly if following entries are enabled in the `/etc/cinder/cinder.conf` file.

```
hp3par_snapshot_retention=48
hp3par_snapshot_expiration=72
```

To correct this issue, edit the `/etc/cinder/cinder.conf` file to disable these entries by commenting-out the entries, as follows:

```
#hp3par_snapshot_retention=48
#hp3par_snapshot_expiration=72
```

The `hp3par_snapshot_retention` entry is the time in hours to retain a snapshot.

The `hp3par_snapshot_expiration` entry is the time in hours when a snapshot expires and is deleted.

LDAP conflict causing error with templates

When deploying templates, such as `VMAutoScaling.yaml` you might receive a n error similar to the following:

```
Error: Can't find role heat_stack_user
```

The problem is due to an inconsistency in the HP Helion OpenStack Carrier Grade LDAP implementation. To fix this problem, you should disable LDAP in Keystone and create few roles as mentioned below.

How you fix the problem depends upon whether your he HP Helion OpenStack Carrier Grade cloud is currently deployd.

Cloud is not deployed

1. If the HP Helion OpenStack Carrier Grade cloud is not deployed, before deploying edit the `definition.json` file to set `ldap_enabled` to 0.

   ```
   "ldap_enabled": 0,
   ```

   This setting causes the cloud to deploy with SQL as Keystone backend instead of LDAP.
2. After you deploy the cloud, create the following roles in the Keystone by logging on to one of the controller nodes:

   a. Source the stackrc file:

   ```
   source stackrc
   ```

   b. Execute the following command to create the heat_stack_owner role:

   ```
   keystone role-create --name heat_stack_owner
   ```

   c. Execute the following command to create the heat_stack_owner role:

   ```
   keystone role-create --name heat_stack_user
   ```

Cloud is currently deployed

1. After the cloud is deployed, on each controller, modify the `/etc/keystone/keystone.conf` to comment-out the LDAP entry and uncomment SQL driver, as shown:

   ```
   [identity]
   driver = keystone.identity.backends.sql.Identity
   #driver = keystone.identity.backends.ldap.Identity
   ```

2. Create the following roles in the Keystone by logging on to one of the controller nodes:

   a. Source the stackrc file:

   ```
   source stackrc
   ```

   b. Execute the following command to create the heat_stack_owner role:

   ```
   keystone role-create --name heat_stack_owner
   ```

   c. Execute the following command to create the heat_stack_owner role:

   ```
   keystone role-create --name heat_stack_user
   ```

Floating IP not working when SNAT is enabled

When router is configured either centralized (server default) or distributed , it is seen that Floating IP is not working.

To fix this issue, log onto `controller-0` for the KVM region and execute the following command to disable SNAT on the router:

```
neutron router-update <router-name> --external_gateway_info type=dict
  network_id=<network-id>,enable_snat=False
```

Unable to create new users through the Horizon UI

After logging into the Horizon interface as an `admin` user, an error occurs when you click **Create User** under the **Idenity** section.

You can create users with the OpenStack Keystone CLI commands. For axample:

```
keystone user-create --name <user-name> [--tenant <tenant>][--pass [<pass>]]
  [--email <email>][--enabled <true|false>]
```

For more information, see *OpenStack Command-Line Interface Reference*.

Unable to create new project through the Horizon Identity UI

After logging into the Horizon interface as an `admin` user, an error occurs when you click **Create Project** under the **Idenity** section.

You can create projects with the OpenStack Keystone CLI commands. For axample:

```
keystone tenant-create --name <tenant-name>
                [--description <tenant-description>]
                [--enabled <true|false>]
```

For more information, see *OpenStack Command-Line Interface Reference*.

Cinder Volume Backup is not working upon cloud deployment

Cinder Volume Backup is not working upon installation of HP Helion OpenStack Carrier Grade 1.1 The `cinder.backup.driver` file is not present in /etc/cinder/cinder.conf.

Bonding on the control interface is not supported

Due to an issue in `config_region` script, bonding on the control interface (hosts PXE, CLM, BLS, CAN networks) is not supported. A patch to support this feature is actively being worked upon.

Because of this issue, the data interface on the compute node does support balanced-xor bonding mode and Active/Standby modes.

LAG for the KVM region control plane does not work

Link aggregation groups (LAG) are not supported in the the KVM region control plane. This is a known limitation that is scheduled to be corrected with the HP Helion OpenStack Carrier Grade GA release. A LAG is a mechanism that allows multiple parallel Ethernet network connections between two hosts to be used as a single logical connection.

SR-IOV limitations

- SR-IOV is supported only for Intel 82599.
- The maximum number of VFs per NIC is 32.
- SR-IOV and PCI passthrough cannot both be used on the same provider network.

Interface or interface consolidation limitations

- VLAN over bonded interface without an assigned network type is not supported.
- Addition of an infrastructure interface after installation is not functional.
- Consolidation of the infrastructure network over the OAM network is not supported.
- Stacked VLANs are not supported. On a consolidated management or infrastructure interface, a VLAN provider network can be associated directly with the untagged interface; however, flat or VXLAN provider networks must be associated with a consolidated VLAN data interface.
- Interface profiles cannot be created for VLAN interface types.
- The `system host-if-modify-ports` command is deprecated.

Mellanox limitations

- For a Mellanox CX3, all ports must be used ether for data interfaces, or for non-data interfaces. It is not possible to use some ports for data interfaces and others for non-data interfaces on the same Mellanox CX3 NIC.
- Jumbo frames are not supported on Mellanox NICs.

Installation does not fully utilize disks greater than two terabytes

HP Helion OpenStack Carrier Grade in the KVM region can be installed on disks greater than 2 TB, but only 2 TB of the disk is useable.

Guest heartbeat and notification features are not fully validated.

Heartbeat and notification services for VMs are not fully validated.

Cinder API version generates a log warning

The V1 API for Cinder in use by this version of HP Helion OpenStack Carrier Grade is deprecated, resulting in log warnings.

Applying Customer-specific Branding (optional)

You can optionally apply customer-specific branding by including a branding tarball.

For more information on creating the branding tarball, see the instructions in the `wrs-branding-1.0.0.tgz` in the HP Helion OpenStack Carrier Grade SDK tarball.

The branding tarball can be applied at various stages. The steps for each stage are described below.

📝 **Note:**

> The recommended method is to install the tarball before running the controller configuration script.

1. Log into the active controller using the CLI.
2. Delete any previous tarball from the `/opt/branding` directory.
3. Copy the new branding tarball to the `/opt/branding` directory.
4. Install the branding.

   To install the branding as part of initial system configuration, run the configuration controller script.

   If you have already run the controller configuration script, you can install the branding as follows:

   a. Ensure that any previous tarballs are deleted from the `/opt/branding` directory.
   b. Ensure that the new branding tarball is copied to the `/opt/branding` directory.
   c. Execute the following command:

   ```
   sudo service horizon restart
   ```

   This processes the branding files on the active controller.
   d. Lock the inactive controller.
   e. Unlock the inactive controller.