



TEST PLAN

for

QLogic NIC SR-IOV Plugin 1.0-1.0.0-1
Mirantis OpenStack 7.0/8.0

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Revision history

Version	Revision date	Editor	Comment
0.1	01.07.2016	D. Mecredy	

QLogic NIC SR-IOV Plugin

OpenStack (starting with Juno) adds inbox support to request virtual machine (VM) access to the virtual network through single root input/output virtualization (SR-IOV) NIC. With the introduction of SR-IOV-based NICs, each SR-IOV port is associated with virtual functions (VFs). SR-IOV ports are provided by hardware based virtual Ethernet bridging (HW VEB).

Mirantis OpenStack is the orchestration solution that is commonly used in network data centers and has several components: compute, storage, dashboard, and networking. For networking connectivity under Neutron, 3400/8400/45000 Series Adapters support a comprehensive list of virtualization and multi-tenant services, including SR-IOV and virtual extensible LAN (VXLAN) offloads for the most sophisticated enterprise data centers, as well as private, public, and hybrid cloud deployments. With the Neutron networking component, QLogic offers several optimizations including VXLAN offloads and Open vSwitch (OVS) integration. The QLogic poll mode driver (PMD) allows the use of optimized networking for OpenStack using virtual network appliances running on the OpenStack Nova compute platform.

Developer's specification



fuel-qlogic-plugin-
sriov_devguide.rst

Limitations

- The Fuel plugin is only compatible with OpenStack environments deployed with Neutron using OVS + VLAN.
- It will configure SR-IOV on a single interface (should not be Storage and Mgmt Nw), whichever is discovered first with link up.
- QLogic 3400/8400 Series Adapters are not able to set the quality of service (QoS) bandwidth limit on SR-IOV VFs.
- The SR-IOV IP network interface does not receive the DHCP IP address while creating the VM. Therefore, you must assign the IP address for the SR-IOV interface manually.
- When an MOS maintenance update is applied, run the `update_controller.sh` script manually to make sure that the `ml2_sriov_agent.ini` file is added as part of `neutron_server.conf` file, and then restart neutron-server service. The neutron-server service can be run from Fuel master nodes for controller nodes:

```
# fuel node --node xx,yy --tasks fuel-plugin-qlogic-update-neutron-startup-sh
```

Test strategy

- Fuel Master node (deployed with 7.0 or 8.0) installed with fuel-plugin-qlogic-sriov.
- Servers that deploy compute node should support VT-d/SRIOV enabled.
- NIC switch and adapter should be Link Up and SR-IOV enabled.
- The QLogic 3400/8400 Series Adapter driver (bnx2x) must be installed on the VM. To download current adapter drivers, go to driverdownloads.qlogic.com.

Types of tests included

System integrations testing should be done manually; there is no automated testing.

Types of tests not included

NA

Acceptance criteria

All tests should pass except those affected by external factors, such as switch configuration and switch status.

Test environment and infrastructure

Fuel Master node (deployed with 7.0 or 8.0) with installed Fuel plugin qlogic sriov. Servers that deploy compute node should support VT-d with SR-IOV enabled.

Should have supported NIC Switch and Adapter should be Link up and SR-IOV enabled

Product compatibility matrix

Issue	Version
Mirantis OpenStack	7.0/8.0
Fuel qlogic sriov plugin	1.0.0

System testing

Install plugin and deploy environment

Test Case ID	install_plugin_deploy_env
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>).3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and another role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Configure fuel-plugin-qlogic-sriov plugin with the default number of VFs and the VLAN minimum and maximum range.9. Deploy the cluster.10. Create two VMs with SR-IOV ports and run traffic between them.11. After the successfully deploying the cluster, open the Horizon Portal.12. Run the QLogic NIC SR-IOV test, and confirm that it is successful.
Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>All plugin services are enabled and function properly.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Traffic runs successfully between VMs/VFs over SR-IOV ports.</p>

Install plugin and deploy environment with minimum and maximum VFs for SR-IOV

Test Case ID	install_plugin_deploy_env_with_Min_and_Max_Vfs
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>.3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and another role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Configure fuel-plugin-qlogic-sriov plugin with the minimum number of VFs, and then do the following:<ol style="list-style-type: none">a. Deploy the cluster.b. After successfully deploying the cluster, open the Horizon Portal.c. Create two VMs with SR-IOV ports, and then run traffic between them.d. Run the QLogic NIC SR-IOV test with the minimum number of VFs, and confirm that it is successful.9. Configure fuel-plugin-qlogic-sriov plugin with the maximum number of VFs, and then do the following:<ol style="list-style-type: none">a. Deploy the cluster.b. After successfully deploying the cluster, open the Horizon Portal.c. Create two VMs with SR-IOV ports, and then run traffic between them.d. Run the QLogic NIC SR-IOV test with the maximum number of VFs, and confirm that it is successful.

Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>All plugin services are enabled and function properly with the minimum and maximum number of VFs.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Traffic runs successfully between VMs/VFs over SR-IOV ports.</p>
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Install plugin and deploy environment and confirm correct link speed for SR-IOV VF

Test Case ID	install_plugin_deploy_env_and_check_it_show_correct_link_speed_for_SR-IOV_VF
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>.3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and another role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Configure fuel-plugin-qlogic-sriov plugin with the minimum number of VFs, and then do the following:<ol style="list-style-type: none">a. Deploy the cluster.b. After successfully deploying the cluster, open the Horizon Portal.c. Create two VMs with SR-IOV ports, and then run traffic between them. Confirm that the link speed at the VM is 10Gbps.9. Configure fuel-plugin-qlogic-sriov plugin with the default number of VFs, and then do the following:<ol style="list-style-type: none">a. Deploy the cluster.b. After successfully deploying the cluster, open the Horizon Portal.c. Create two VMs with SR-IOV ports, and then run traffic between them. Confirm that the link speed at the VM is 10Gbps.10. Run OSTF.

Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>All plugin services are enabled and function properly at the correct link speed (10Gbps for the QLE8442).</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Traffic runs successfully between VMs/VFs over SR-IOV ports at 10Gbps.</p>
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Install plugin and deploy environment and confirm that traffic runs correctly between VFs for SR-IOV

Test Case ID	install_plugin_deploy_env_and_check_traffic_for_SR-IOV_VF
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>.3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and another role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs.9. Deploy the cluster.10. Create two VMs with SR-IOV ports and run traffic between them.11. After successfully deploying the cluster, open the Horizon Portal.12. Create two VMs with SR-IOV ports, and then run traffic between them using tools such as iperf/netperf.13. Run OSTF.
Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>All plugin services are enabled and that traffic is running between the VFs that are attached to the VMs.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Traffic runs successfully between VMs/VFs over SR-IOV ports.</p>

Install plugin and deploy environment and confirm that traffic runs with maximum speed between VFs

Test Case ID	install_plugin_deploy_env_and_check_traffic_run_with_performance_between_SR-IOV_VF
Steps	<ol style="list-style-type: none"> 1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details). 2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>. 3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI. 4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs). 5. Add 3 nodes with Controller role and 1 node with Compute and another role. 6. Finalize environment configuration (e.g. networking, nodes interfaces). 7. Run network verification check and confirm that it is successful. 8. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs. 9. Deploy the cluster. 10. Create two VMs with SR-IOV ports and run traffic between them. 11. After successfully deploying the cluster, open the Horizon Portal. 12. Create two VMs with SR-IOV ports and run traffic between them. 13. Run OSTF.
Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>All plugin services are enabled and that traffic is running at maximum speed between the VFs.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Traffic runs successfully between VMs/VFs over SR-IOV ports at 10Gbps.</p>

Modifying env with enabled plugin (removing/adding controller nodes)

Test Case ID	modify_env_with_plugin_remove_add_controller
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>.3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and Storage role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs.9. Deploy the cluster.10. Create two VMs with SR-IOV ports and run traffic between them.11. After successfully deploying the cluster, open the Horizon Portal.12. Run the QLogic NIC SR-IOV test and confirm that it was successful.13. Run OSTF.14. Remove 1 node with Controller role.15. Re-deploy the cluster.16. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs.17. After successfully deploying the cluster, open the Horizon Portal.18. Check plugin services using the CLI.19. Run traffic between the two VMs over SR-IOV ports.20. Add 1 new node with Controller role.21. Check plugin services using the CLI.22. Re-deploy the cluster.23. Run traffic between the two VMs over SR-IOV ports.

Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>Plugin is enabled and configured in the Fuel Web UI.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>When adding/removing Controller node (where plugin-related services are run):</p> <ul style="list-style-type: none">● all plugins resources are migrated to another Controller node● the environment is redeployed successfully <p>Traffic runs successfully at 10Gbps between VMs/VFs over SR-IOV ports at every stage of adding and removing controller nodes.</p>
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Modifying environment with enabled plugin (removing/adding Compute node)

Test Case ID	modify_env_with_plugin_remove_add_compute
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>.3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and Storage role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs.9. Deploy the cluster.10. Create two VMs with SR-IOV ports and run traffic between them.11. After successfully deploying the cluster, open the Horizon Portal.12. Run the QLogic NIC SR-IOV test and confirm that it was successful.13. Run OSTF.14. Add 1 new node with Compute role.15. Re-deploy the cluster.16. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs.17. After successfully deploying the cluster, open the Horizon Portal.18. Check plugin services using the CLI.19. Run traffic between the two VMs over SR-IOV ports.20. Remove 1 node with Compute role.21. Check plugin services using the CLI.22. Re-deploy the cluster.23. Run traffic between the two VMs over SR-IOV ports..

Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>Plugin is enabled and configured in the Fuel Web UI.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>When adding/removing Compute node (where plugin-related services are run):</p> <ul style="list-style-type: none">● all plugins resources are migrated to another Compute node● The environment is re-deployed successfully when adding/removing Compute node.
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Fuel create mirror and update (setup) of core repos

Test Case ID	Fuel_create_mirror_update_core_repos
Steps	<ol style="list-style-type: none"> 1. Copy the plugin to the Fuel Master node (please refer to the User Guide for more details). 2. Install the plugin. 3. Ensure that the plugin is installed successfully using CLI with running <code>fuel plugins --list</code> command in the Fuel CLI. 4. Create an environment with enabled plugin in the Fuel Web UI. 5. Add 3 nodes with Controller role and 1 node with Compute and another role. 6. Finalize environment configuration (e.g. networking, nodes interfaces). 7. Enable the plugin and configure it following the instructions from the Plugin Guide. 8. Run network verification check. 9. Configure fuel-plugin-qlogic-sriov plugin with the number of VFs and the VLAN minimum and maximum range. 10. Deploy the cluster. 11. Run OSTF. 12. Go in cli through controller / compute / storage /etc nodes and get pid of services which were launched by plugin and store them. 13. Launch the following command on the Fuel Master node: <code>fuel-createmirror -M</code> 14. Launch the following command on the Fuel Master node: <ol style="list-style-type: none"> a. For MOS < 8.0: <code>fuel --env <ENV_ID> node --node-id <NODE_ID1> <NODE_ID2> <NODE_ID_N> --tasks upload_core_repos</code> b. For MOS 8.0: <code>fuel --env <ENV_ID> node --node-id <NODE_ID1> <NODE_ID2> <NODE_ID_N> --tasks setup_repositories</code> 15. Run the <code>update_controller.sh</code> script manually to make sure that the <code>ml2_sriov_agent.ini</code> file is added as part of <code>neutron_server.conf</code> file, and then restart <code>neutron-server</code> service. The <code>neutron-server</code> service can be run from Fuel master nodes for controller nodes: <code># fuel node --node xx,yy --tasks fuel-plugin-qlogic-update-neutron-startup-sh</code> 16. Go to controller/plugin/storage node and check if plugin's services are alive and aren't changed their pid.

	<p>17. Check with fuel nodes command that all nodes are remain in ready status.</p> <p>18. Rerun OSTF.</p>
Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>Plugin is enabled and configured in the Fuel Web UI.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Plugin's services shouldn't be restarted after corresponding task was executed. If they are restarted as some exception, this information should be added to plugin's User Guide.</p> <p>Cluster (nodes) should remain in ready state.</p> <p>OSTF test should be passed on rerun.</p>

Uninstall of plugin in the deployed environment

Test Case ID	uninstall_plugin_with_deployed_env
Steps	<ol style="list-style-type: none">1. Copy the QLogic NIC SR-IOV plugin to the Fuel Master node (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>.3. Ensure that plugin is installed successfully by running the <code>fuel plugins --list</code> command in the Fuel CLI.4. Create an environment with the enabled plugin in the Fuel Web UI. Confirm that the QLogic NIC SR-IOV plugin exists and is able to configure SR-IOV with the correct number of virtual functions (VFs).5. Add 3 nodes with Controller role and 1 node with Compute and Storage role.6. Finalize environment configuration (e.g. networking, nodes interfaces).7. Run network verification check and confirm that it is successful.8. Deploy the cluster.9. After successfully deploying the cluster, open the Horizon Portal.10. Run the QLogic NIC SR-IOV test and confirm that it was successful.11. Run OSTF.12. Uninstall the plugin by running the following command: <code>fuel plugins --remove fuel-plugin-qlogic-sriov==<version></code>13. Ensure that the following output appears in CLI: <code>400 Client Error: Bad Request (Can't delete plugin which is enabled for some environment.)</code>14. Remove/undeploy the Cluster Environment.15. Uninstall the plugin by running the following command: <code>fuel plugins --remove fuel-plugin-qlogic-sriov==<version></code>16. Confirm that the plugin was uninstalled successfully.

Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>Plugin is enabled and configured in the Fuel Web UI.</p> <p>OSTF tests (Health Checks) are passed.</p> <p>Environment is deployed successfully.</p> <p>Alert is displayed when trying the uninstall the plugin.</p> <p>When the environment is removed, the plugin can be successfully uninstalled.</p>
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Uninstall of plugin in the non-deployed environment

Test Case ID	uninstall_plugin
Steps	<ol style="list-style-type: none"> 1. Copy the plugin to the Fuel Master node (please refer to the User Guide for more details). 2. Install the plugin using the <code>fuel plugins --install</code> command: <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code>. 3. Ensure that plugin is installed successfully with running <code>fuel plugins --list</code> command in the Fuel CLI. 4. Uninstall the plugin by running the following command: <code>fuel plugins --remove fuel-plugin-qlogic-sriov==<version></code>
Expected Result	<p>Plugin is installed successfully at the Fuel Master node and the corresponding output appears in the CLI.</p> <p>Cluster is created and network verification check is passed.</p> <p>Plugin is enabled and configured in the Fuel Web UI.</p> <p>When uninstalling the plugin, no plugin-related elements are left in the environment (e.g. UI elements disappear, Nailgun database is restored to the default state, no output for command "fuel plugins --list").</p>

Installation of QLogic NIC SR-IOV plugin on Fuel versions before 7.0

Test Case ID	Installation_of_Qlogic_NIC_SR-IOV_plugin_on_older_version_of_fuel
Steps	<ol style="list-style-type: none">1. Copy the plugin to the Fuel Master node with version 6.1 (please refer to the User Guide for more details).2. Install the plugin using the <code>fuel plugins --install fuel-plugin-qlogic-sriov-<version>.noarch.rpm</code> command.3. Ensure that plugin does not install successfully with running <code>fuel plugins --list</code> command in the Fuel CLI.
Expected Result	Plugin does not install successfully at the Fuel Master node and the corresponding output appears in the CLI.